PRINTRONIX®

# PrintNet Enterprise Suite

*User's Manual*

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# 1 *Overview*

## PrintNet Enterprise Suite

PrintNet Enterprise Suite (PNE) allows you to organize all of the printers in your office remotely in a single database, download software and printer configuration settings from a host computer with a single mouse click, and use a virtual operator panel to configure printers in the same room or on the other side of the world.

## Requirements

- a line matrix or thermal printer manufactured by Printronix®, Inc.
- the printer must be attached to the host system via a 10/100Base-T network interface card (NIC) or a wireless NIC; if you do not have a NIC, see your dealer for an upgrade. If available, USB connection may also be used.
- a host computer running the Windows® (2000, XP, Server 2003, Vista, Server 2008, or Win 7) or UNIX® (such as Linux® or Solaris™) operating system
- a host computer running a Java™ 2 Platform, Standard Edition (J2SE™) Java Runtime Environment (JRE) that is fully JRE 5 compliant or higher

**NOTE:** Vista, Server 2008, and Win 7 require JRE 6 or later.

- for Windows, a minimum hardware configuration of a 450MHz Pentium® with 128 MB of RAM

To install and edit the database, it is not necessary to have the printers connected. When starting a session with a printer, the printer must be connected and turned on.

## Installing the Software

The Windows, Linux, and Solaris versions of JRE 5 (or later version) and the Java-based PNE are available on CD. Follow the on-screen instructions to first install JRE 5 for your platform, then PNE.

**NOTE:** If you are using Vista, Server 2008, or Win 7, download JRE 6 or later at **http://java.sun.com/javase** Install JRE 6 or later first, then PNE.

If you have another UNIX operating system, see your system administrator.

## Printer Setup

Your printer uses the diagnostic port to communicate with PNE. The diagnostic port must be configured to interact with the NIC. Follow the PNE, Telnet, or Operator Panel Method below for your printer model to configure the diagnostic port.

## PNE Method

### All Supported Printers

You can configure the diagnostic port to interact with the NIC using PNE. See Enable Remote Printer Management on page 132.

## Telnet Method

### All Supported Printers

1. Install and enable the NIC (refer to the installation instructions).
2. Make sure the IP Address is set up on the NIC:
   - Use the operator panel (refer to the *User's Manual*).

   – OR –

   - Use PNE: select **Utilities** Y **Assign IP Address**. See Assign IP Address on page 131.
3. Open a command prompt session and type:
   **`telnet ipaddress`**
4. At the telnet `login:` prompt, type:
   **`root`**<Enter>
5. At the `Password:` prompt, enter the password and press <Enter> (there is no password by default)
6. At the *`ipaddress`*`:root>` prompt, type:
   **`enable printermgr`**<Enter>
7. Close the telnet session. The NIC is now activated.

## Operator Panel Method

### T8000 Series Line Matrix Printers

1. Press **ONLINE** key to enter Offline mode.
2. Press Left or Right key until the Settings icon is highlighted.
3. Press ↵ to enter Menu mode.
4. Press the UP and Down keys at the same time to unlock the ↵ key.
5. Press the Left or Right key until the System icon is highlighted.
6. Press ↵ to enter the SYSTEM menu.
7. Press the Up or Down key until Printer Mgmt is highlighted.
8. Press ↵ to enter the Printer Mgmt menu.
9. Press the Up or Down key to until PNE Port Choice is highlighted.
10. Press ↵ to change the PNE port selection.
11. Press the Up or Down key until Ethernet displays.
12. Press ↵ to select it. An asterisk (*) displays after Ethernet.
13. Press the UP and Down keys at the same time to lock the ↵ key.
14. Press the Online key to select how the new setting should be applied.
15. Press the Up or Down key to select whether the setting should be saved permanently or temporary.

16. Press ↵ to save the setting and place the printer back online.

**P8000 Series Line Matrix Printers**

17. Press **ONLINE** key to enter Offline mode.
18. Press ↵ key to enter Menu mode.
19. Press the UP and Down keys at the same time to unlock the ↵ key.
20. Press the C> (Right) and v (Down) keys until DIAGNOSTICS displays.
21. Press ↵ to enter the DIAGNOSTICS menu.
22. Press the /:: (Up) key until Printer Mgmt displays.
23. Press ↵ to enter the Printer Mgmt menu.
24. Press v (Down) key to until PNE Port displays.
25. Press the C> (Right) key until Ethernet displays.
26. Press ↵ to select it. An asterisk (*) displays after Ethernet.
27. Press the /:: (Up) and v (Down) keys at the same time to lock the ↵ key.
28. Press the **Online** key twice to place the printer back online.

**P7000 Series Line Matrix Printers**

1. On the operator panel, press the **ON LINE CLEAR** key to take the printer offline.
2. Press ▪ and ..f at the same time to unlock the ENTER key.
3. Press * until PRINTER MGMT displays.
4. Press ▪ until PNE Port displays.
5. Press ▪ again to see the current selection.
6. If you have the internal PCI NIC, press * until Ethernet displays. If you have the external NIC, press +i until Adapter displays.
7. Press **ENTER** to select it.
8. Press ▪ and ..f at the same time to lock the ENTER key.
9. Press **ON LINE CLEAR** to put the printer back online.

**SL5000r/T5000r Series Thermal Printers**

1. On the operator panel, press the **PAUSE** key to take the printer offline.
2. Press ☰ to place the printer in Menu mode. QUICK SETUP displays on the operator panel.
3. Press ↓ and ↵ at the same time to unlock the ↵ key.
4. Press **+** until PRINTER MGMT displays.
5. Press ↓ until PNE Port displays.

**NOTE:** If PNE Port does not display, see Factory Menu below.

6. If you have the internal PCI NIC, press **+** until Ethernet displays. If you have the external NIC, press **+** until Adapter displays.
7. Press ↵ to select it.
8. Press ↓ and ↵ at the same time to lock the ↵ key.
9. Press **PAUSE** twice to put the printer back online.

**Factory Menu**

1. On the operator panel, press the **PAUSE** key to take the printer offline.
2. Press ↓ and ↵ at the same time to unlock the ↵ key.
3. Press **+**, **–**, ↓, and ↑ at the same time to enter the Factory menu.
4. Press ↓ until PNE Port (or Diagnostic Port) displays.
5. If you have the internal PCI NIC, press **+** until Ethernet (or Debug Ethernet) displays. If you have the external NIC, press **+** until Adapter (or Debug Adapter) displays.
6. Press ↵ to select it.
7. Press ↓ and ↵ at the same time to lock the ↵ key.
8. Press **PAUSE** twice to put the printer back online.

**SL4M/T4M Series Thermal Printers**

1. Press ☰ to enter Menu mode.
2. Press the Down and ↵ keys at the same time to unlock the ↵ key.
3. Press the Right key until PRINTER SETUP displays.
4. Press ↵ to enter the PRINTER SETUP menu.
5. Press the Up key until Admin User displays.
6. Press the Right key until Enable displays.
7. Press ↵ to select it. An asterisk (*) displays after Enable.
8. Press ☰ to enter Menu mode. MEDIA SETUP displays.
9. Press the Down key until INTERFACES displays.
10. Press ↵ to enter the INTERFACES menu.
11. Press the Down key until Printer Mgmt displays.
12. Press ↵ to enter the Printer Mgmt menu.
13. Press the Down key until PNE Port displays.
14. Press the Right key until Ethernet displays.
15. Press ↵ to select it. An asterisk (*) displays after Ethernet.
16. Press the Down and ↵ keys at the same time to lock the ↵ key.
17. Press ⏸ twice to put the printer back online.

## Set Password

See Set Printer Password on page 119 to learn how to set passwords.

If the password is unknown you must clear it first.

**P8000 Series**

Go into the Factory menu (press /::, v, <J, and C> at the same time when the printer is offline), then into the PNE Access menu. Press v until Clear Password displays. Unlock the ENTER key, then press **ENTER** to clear the User and Supervisor passwords.

Under the Security tab in Printer Properties, delete any passwords that already exist. Now you may set new passwords as described on page 119.

**P7000 Series**

Go into the Factory menu (press +i, *, ━, and ..f at the same time), then into the PRINTER MGMT menu. Press +i until Clear Password displays. Unlock the ENTER key, then press **ENTER** to clear the User and Supervisor passwords.

Under the Security tab in Printer Properties, delete any passwords that already exist. Now you may set new passwords as described on page 119.

**SL5000/T5000 Series**

Go into the Factory menu (press **+**, **–**, ↓, and ↑ at the same time). Press ↑ or ↓ until Clear Password displays. Unlock the ↵ key, then press ↵ to clear the User and Supervisor passwords.

Under the Security tab in Printer Properties, delete any passwords that already exist. Now you may set new passwords as described on page 119.

**SL4M/T4M Series**

Go into the Factory menu (press the Up, Down, Left, and Right keys at the same time). Press ↑ or ↓ until Clear Password displays. Unlock the ↵ key, then press ↵ to clear the User and Supervisor passwords.

Under the Security tab in Printer Properties, delete any passwords that already exist. Now you may set new passwords as described on page 119.

**All Other Printers**

Go into the Factory menu, then into the PRINTER MGMT menu.

Press **NEXT** until Clear Password displays. Unlock the ENTER key, then press **ENTER** to clear the User and Supervisor passwords.

Under the Security tab in Printer Properties, delete any passwords that already exist. Now you may set new passwords as described on page 119.

## Set Telemetry Path (SL5000/T5000 Series Only)

The following procedure enables you to collect data using the Data Validation application.

1. On the operator panel, press the **PAUSE** key to take the printer offline.
2. Press ☰ to place the printer in Menu mode. QUICK SETUP displays on the operator panel.
3. Press ↓ and ↵ at the same time to unlock the ↵ key.
4. Press **+** until VALIDATOR displays.
5. Press ↓ until Telemetry Path displays.
6. Press **+** or **–** until Network Port displays.
7. Press ↵ to activate it.

**NOTE:** Since only one port can be used at a time, DEACTIVATING HOST SERIAL displays.

If you later change the setting to Serial Port or Disabled, REACTIVATING HOST SERIAL will display.

8. Press ↓ and ↵ at the same time to lock the ↵ key.
9. Press **PAUSE** twice to put the printer back online.

For more information, refer to the *Online Data Validator User's Manual*.

## Check Port Number

Make sure your printer port number has the same setting as the NIC. To check the port number using PNE, see page 21.

To check the port number on the printer, see Table 1 to determine the port number menu location for your printer model. The default port number is 3001.

**IMPORTANT** **Do not set the PNE Port Number to the same value as the Status Port Number (the default is 3002) or the Mgmt Port Number (the default is 3007).**

**Table 1 Port Number Menu Location**

| Printer Model | Menu |
|---|---|
| SL4M/T4M | INTERFACES ▶Printer Mgmt ▶PNE Port Number |
| SL5000r/T5000r | PRINTER MGMT or Factory ▶PNE Port Number |
| P8000<br>P7000 | PRINTER MGMT ▶PNE Port Number |

# Loading and Using Foreign Language Fonts

PNE supports Asian languages such as Korean, Simplified Chinese, and Traditional Chinese. UTF-8 encoding is utilized since it has the ability to support all known languages and is backwards compatible with ASCII (specifically 0 - 7F).

Microsoft operating systems provide most of fonts for the world languages which can be obtained from Microsoft's web site. UNIX operating systems such as Linux and Solaris requires more setup since the operating systems provide less fonts than Microsoft. Java uses five logical fonts (Dialog, Dialoginput, Serif, Sanserif and Monospaced) to map to the fonts on the system. Mapping is done in the Java font.properties file. Dialog, size 12 is the default font for all language dependent applications. Through mapping of the font.properties file, the Dialog font supports all of the printer supported languages. Mapping of operating system fonts should be performed by a System Administrator.

## Limitations

Not all of the items in the PNE Suite will display UTF-8. All PNE menus, dialogs, tooltips and printer names will be displayed in ASCII.

Only the following applications, utilities, and displays support UTF-8 encoding:

- Printer Database status messages
- Printer configuration languages in the Configuration Editor
- Information Capture's viewable configuration data
- Virtual Operator Panel text
- Factory Settings Differences table data
- Web page support (Printer List Page Message area only)
- SNMP Browser data

Older versions of PNE Suite (including previous products such as Advanced Tool Kit, ODV Data Manager and EPC Data Manager) will not support new printers with UTF-8 encoded byte streams.

All versions of PNE Suite that support UTF-8 encoding will support older printer firmware versions.

## Windows Setup

Java for Windows platforms includes a font.properties file that is used to map foreign languages to Microsoft Window fonts. This includes all languages supported on the printer.

## Unix Setup

Java for Linux platforms also includes a font.properties file. This file needs to be modified to support the fonts on the user's Linux or Solaris platforms.

Find or purchase the printer supported fonts for the languages needed. The additional printer languages supported include Korean, Simplified Chinese, and Traditional Chinese. Use a package manager such as Red-Hat Package Manager (RPM) to load the font files onto the UNIX system. Once the fonts are loaded, modify the component font mappings in the font.properties file for Allfonts, Serif, Sansserif, Monospaced, Dialog and Dialoginput Logical fonts. Use absolute path names, path names starting with $JRE_LIB_FONTS or X Logical Font Description (xlfd) names for the fonts.

Add the following:

- new font names to the search sequences
- any exclusion character ranges for the languages
- the paths to the locations of the actual font files.

Finally, add the valid X11 font directories to the X11 server font path. For a detailed description of the font.properties file see Sun's Java Internationalization Guide at http://java.sun.com/j2se/1.5.0/docs/guide/intl/fontconfig.html.

See Appendix A for an example of a font.properties file for Asian languages on a Linux OS.

# Getting Started

This section provides a short tutorial on how to set up and access a printer using PNE.

1. This tutorial assumes the host computer running PNE and the printer you want to access are connected by a network. You must know the printer's IP Address and Port Number.
2. From your operating system, launch PNE. Click the splash screen to see the main window of the printer database more clearly. See Figure 1.

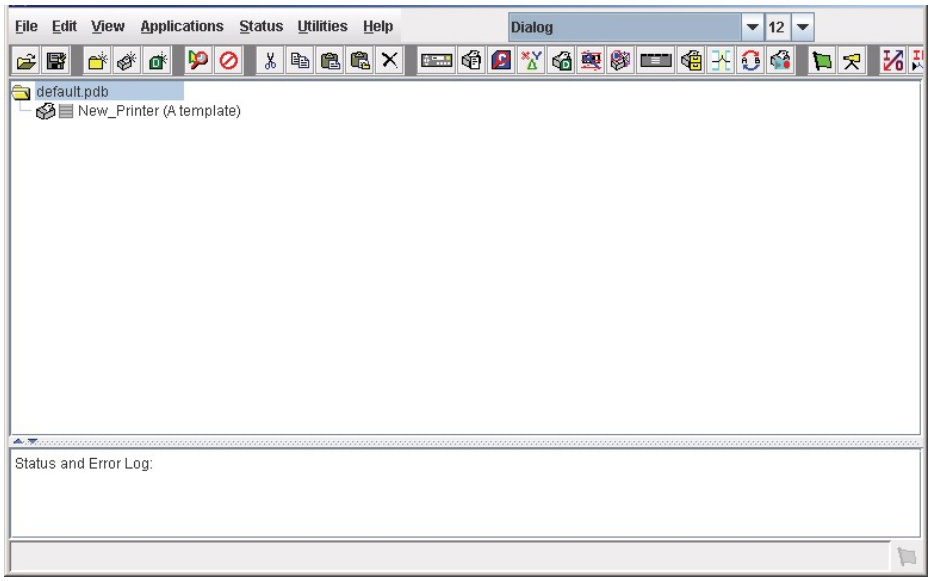



**Figure 1 Printer Database Main Window**

3. If your printer has USB connected to the PC, you will see the USB printer device. See Figure 2.

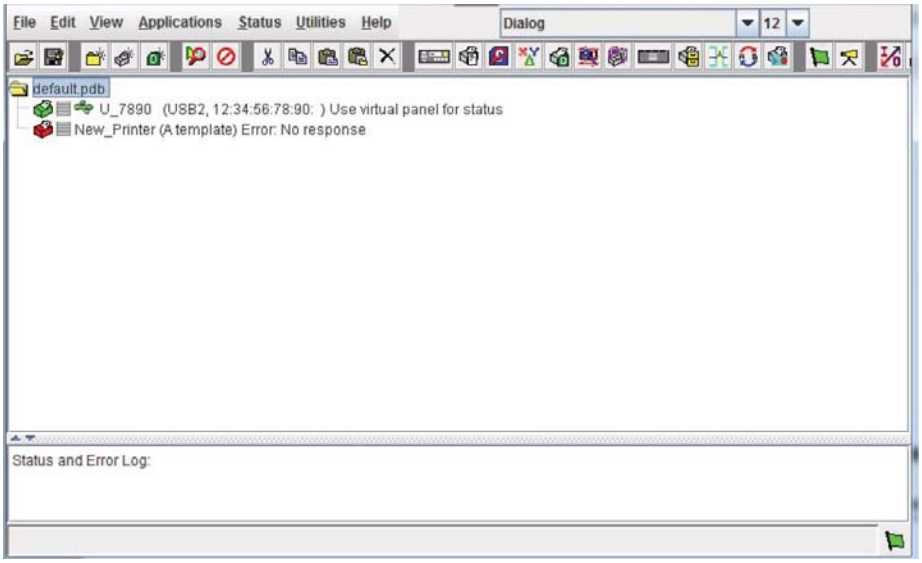



**Figure 2 Printer Database Main Window with USB Connection**

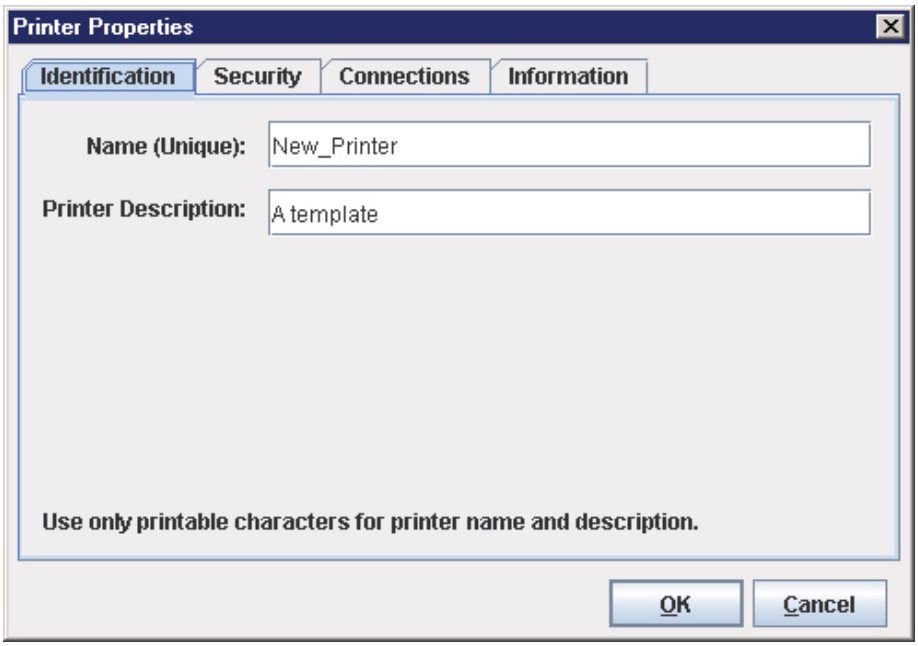



**Figure 3 Printer Properties: Identification Tab**

4. Double-click **New_Printer (A template)**. The Printer Properties dialog box opens. See Figure 3.
5. Assign a name to your printer. Delete the words **New_Printer** in the Name (Unique) field, and then type **`Tutorial`**.
6. Assign a description to this printer. Delete the words **A template** in the Printer Description field, and then type **`My First Connection`**.

**Figure 4 Printer Properties: Security Tab**

7. Click the **Security** tab. See Figure 4.
8. If you are using PNE for the first time, it is likely that no passwords are assigned to this printer. If you are unsure, contact your system administrator.

- If no passwords are assigned, leave the password boxes empty.
- If a User password is necessary to access this printer, type the password in the User Password field.
- If a Supervisor password is necessary to access this printer, type the password in the Supervisor Password field, and check the Supervisor Mode check box.
- If a Telnet guest password is necessary to poll the status of the printer, type the password in the Telnet Guest Password field. See Security Tab on page 58.
- If a Telnet root password is necessary to update wireless printer settings, type the password in the Telnet Root Password field. See Security Tab on page 58.

In any case, an asterisk (*) character appears in the field after each letter you type to preserve password secrecy.

For more details on setting up and changing passwords, see page 52.

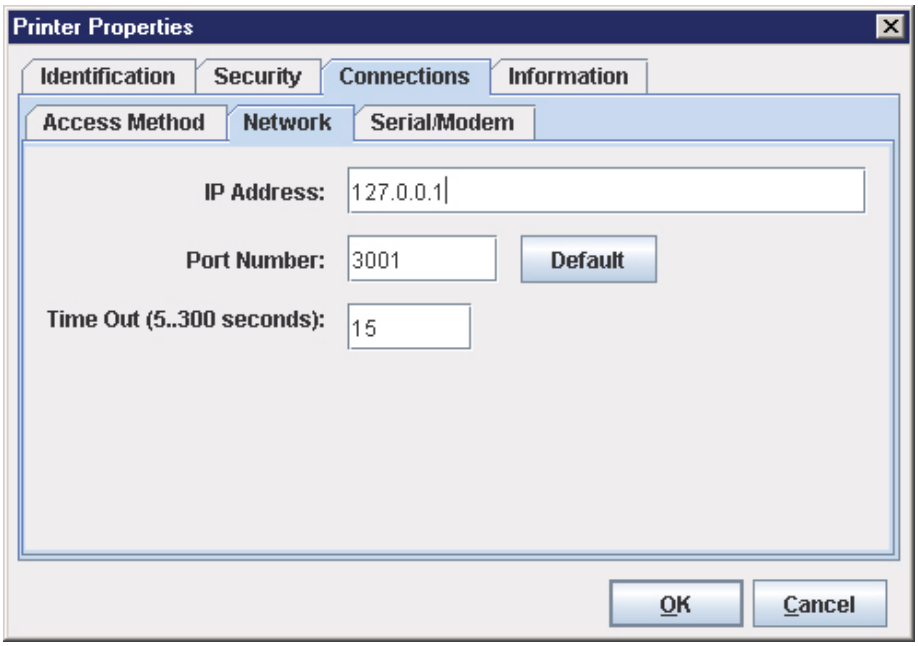



**Figure 5 Printer Properties: Connections Tab – Network Sub-Tab**

9. Click the **Connections** tab. By default, the Network sub-tab displays.
10. Click the **IP Address** field and then type the IP Address of the printer you want to access. Follow the format shown in Figure 5.

    The Port Number field must be set to the same port as the printer. Leave it set at 3001. Leave the Time Out (5..300 seconds) field set at 15 seconds.

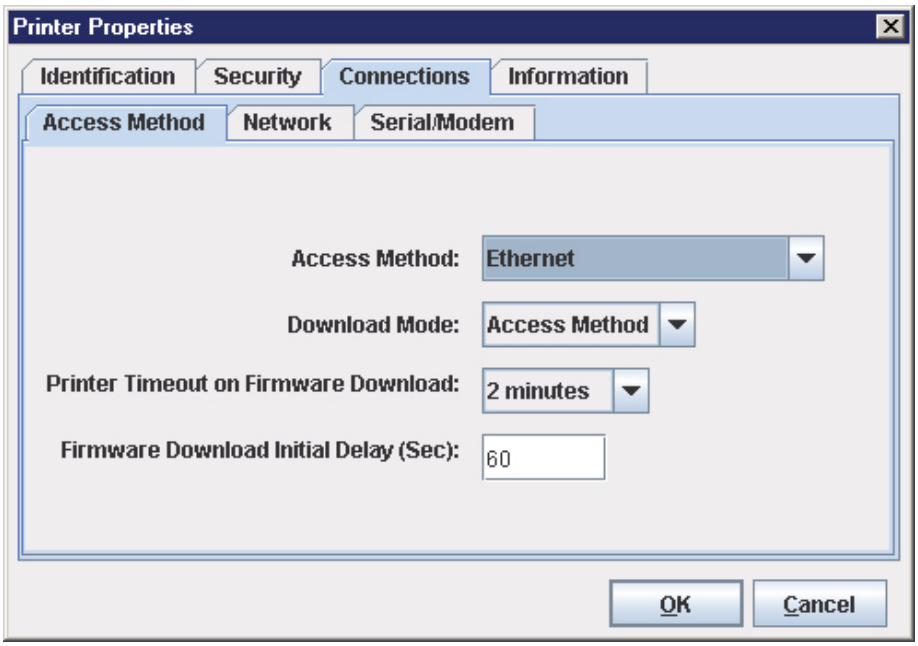



**Figure 6 Connections: Connections Tab – Access Method Sub-Tab**

11. Click the **Access Method** sub-tab. See Figure 6.

    The Access Method tells PNE how the host computer communicates with the printer. Make sure it is set to Ethernet. Ignore Download Mode and Download Timeout for now. These options are described in Access Method Sub-Tab on page 61.

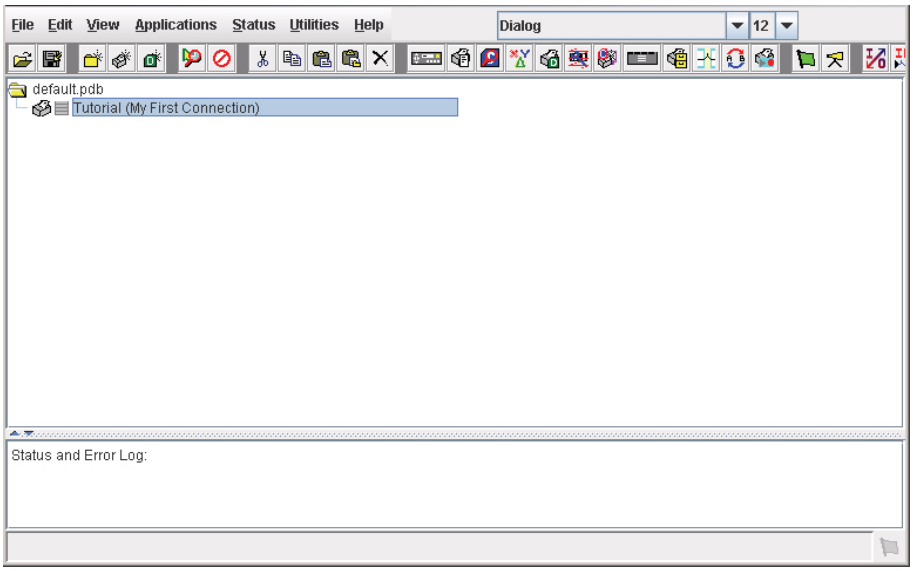



**Figure 7 Printer Database Main Window**

12. Click **OK**. The Printer Properties dialog box closes and you return to the printer database main window. See Figure 7. Your printer is now set up in the PNE database.
13. Try to access the virtual operator panel as a test to see if the information you input is accurate. Follow this procedure:
    a. **Tutorial (My First Connection)** should be highlighted in blue, as shown in Figure 7. If it is not highlighted, click it to select it.
    b. Select **Applications ▶ Operator Panel**. The virtual operator panel appears (see Operator Panel on page 97). If not, an error message appears in the Status and Error Log pane. Check your password to make sure it is correct. If the error continues, contact your system administrator.
    c. Printers connected via the USB interface are automatically detected by PrintNet Enterprise. The USB interface cannot be manually selected using the Access Method mentioned above. To ensure that a USB connected printer is detected, the printer must have the PNE Port set to USB. Make sure that USB Support is enabled under PNE Preference. Refer to the Printer Setup section (page 11) for instructions on setting the PNE Port.

       PNE will search for USB connected printers every minute when the application is running.

**IMPORTANT** **Before starting PNE, make sure the printer is connected via USB and the PNE Port setting is correct. Otherwise, the application may not find the printer.**

All USB connected printers that were detected is listed at the top of the printer tree.

# 2 *Printer Database*

## Overview

When you start PNE, the printer database window appears first. The printer database tool organizes and controls printers and Download files. Figure 8 shows how the database looks when PNE launches for the first time.

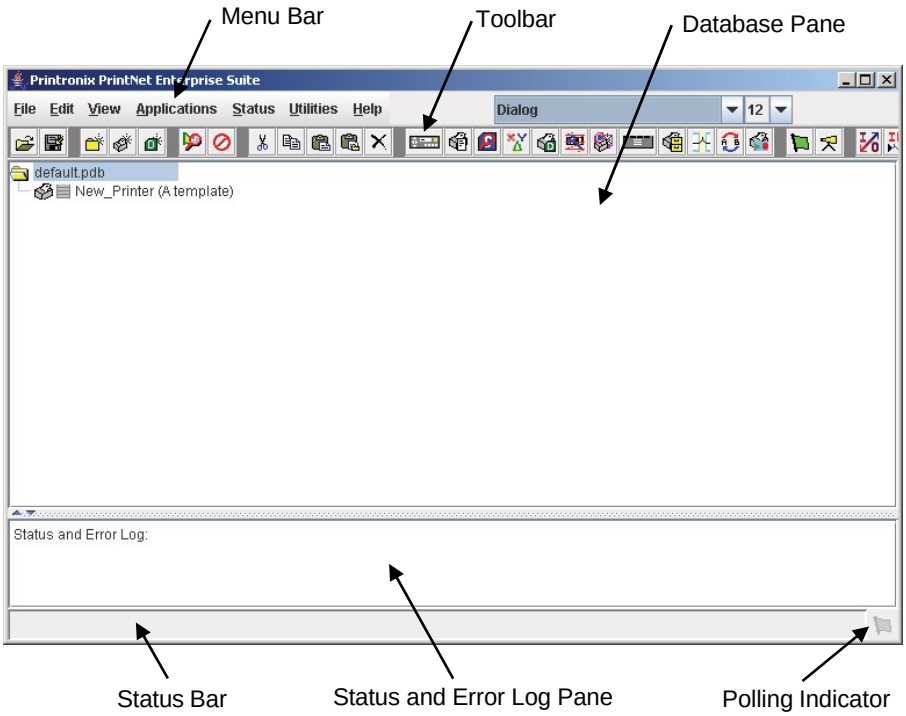



**Figure 8 Printer Database Main Window**

The menu bar contains all the menus used to control the functions of the program. The menus are described later in this chapter.

The toolbar contains buttons for the most commonly used menu functions. See page 54 for descriptions of the toolbar buttons.

Use the Database pane to access and control your printers in a tree format. The first line of the database tree displays the database file name. In Figure 8, the default file name for this database is **default.pdb**. From there, your database tree branches out to include printers, folders, and Download files, which you can organize into groups. With a single mouse click, you can download a file to several printers at once. In addition, you can use as many databases with PNE as you want. Databases save as **.pdb** files on your local hard drive.

**NOTE:** You can open only one printer database at a time.

The Status and Error Log scrolls status and error messages as you work through the program. If PNE does not function properly, look at this pane for error messages. Use the scroll bar on the side of the

pane to reference previous status and error messages. The status and error messages relate to the current PNE session, not to the specific database. When you exit PNE, these messages will be deleted.

The Status Bar displays brief status messages of PNE, some of which appear in the Status and Error Log.

The Polling Indicator turns green whenever printers are being polled.

# The Menu Bar

The printer database menu bar is located at the top of the window (see Figure 8). Use the menu bar to access all the functions of PNE.

The following are descriptions of the options located on the menu bar.

## The File Menu

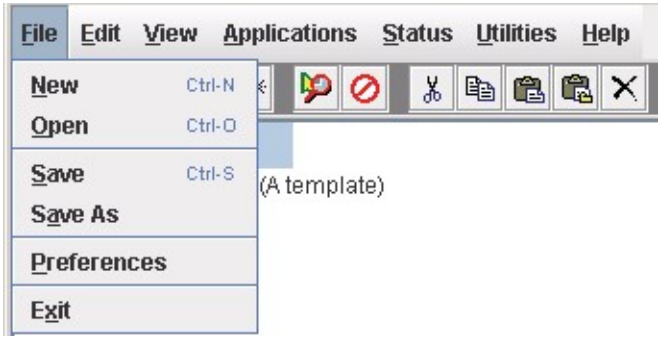



**Figure 9 File Menu**

### New

Creates a new database file. Since PNE allows only one database file to be open at a time, it asks if you want to save your changes to the current database before it creates a new one.

### Open

Opens a database file. Since PNE allows only one database file to be open at a time, it asks if you want to save your changes to the current database before it opens a different one.

### Save

Saves the active database file using its current name.

### Save As

Prompts you to enter a name for the current database file before PNE saves it. Use Save As if you do not want to overwrite the current database file.

### Preferences

Opens the Preferences dialog box. See page 27.

### Exit

Exits PNE.

## Preferences

The Preferences dialog box has three tabs: Printer Database, Configuration Editor, and Servers. See Figure 10.

### Printer Database Tab

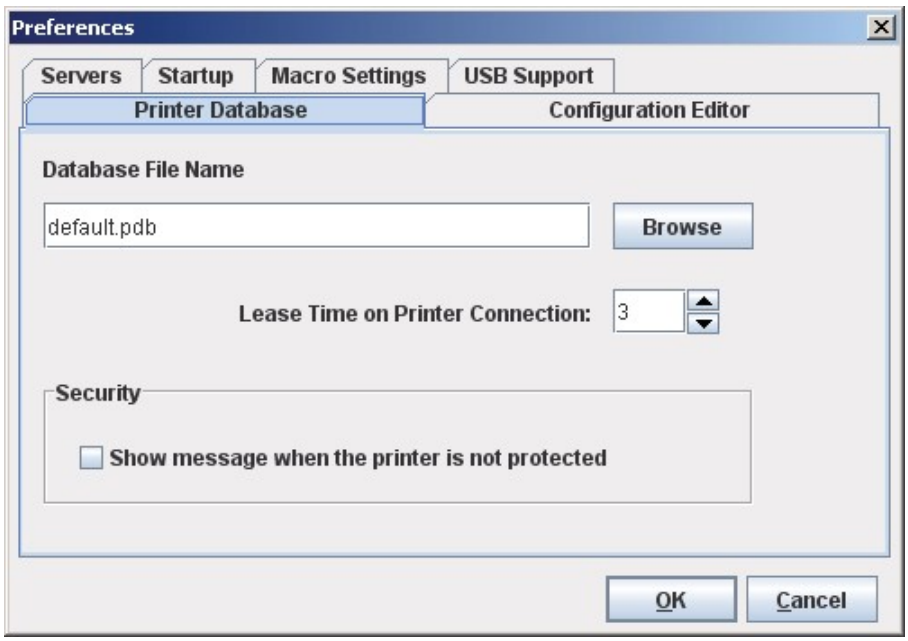



**Figure 10 Preferences: Printer Database Tab**

The Printer Database tab controls database features.

**Database File Name:** Enter the name of the default database file. PNE opens this database file when the program starts. To select a new default database file, type it into the Database File Name field, or click **Browse** to locate a file on your network.

**Lease Time on Printer Connection:** Enter an amount (in seconds) to set the maximum amount of time a printer connection can remain open without any communication. The default is three seconds.

**Security:** Check the **Show message when the printer is not protected** check box to enable a warning message that informs you when a selected printer does not have an assigned password.

**Configuration Editor Tab**

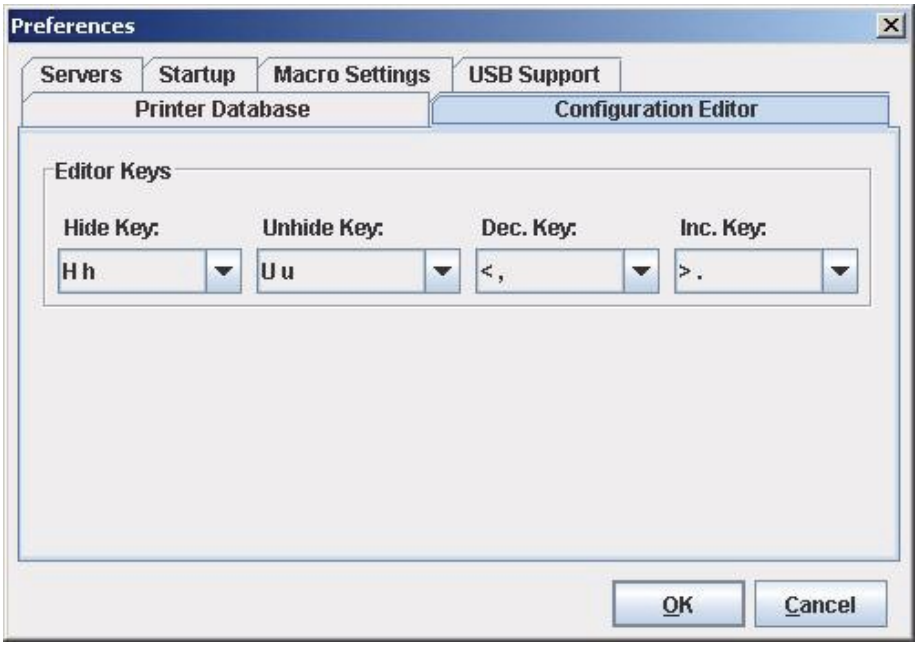



**Figure 11 Preferences: Configuration Editor Tab**

The Configuration Editor tab controls features of the Configuration Editor utility.

**Hide Key/Unhide Key:** Assigns which keys hide and unhide menu items in the Configuration Editor menu tree (see page 65). The default for Hide is H h. The default for Unhide is U u.

**Dec./Inc. Key:** Assigns which keys will decrement and increment menu items in the Configuration Editor menu tree (see page 65). The default for decrement is < ,. The default for increment is > ..

### Servers Tab

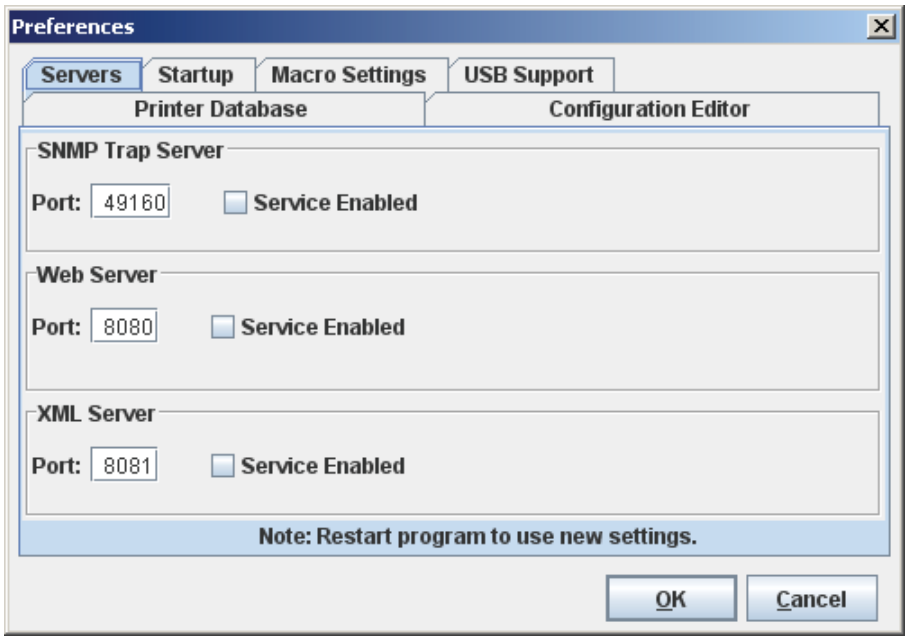



**Figure 12 Preferences: Servers Tab**

The Servers tab allows you to assign port values for the SNMP (Simple Network Management Protocol) Trap Server, the Web Server, and the XML Server. Click **Service Enabled** next to the corresponding server to turn it on.

**NOTE:** You must restart PNE to use the new settings and enable the servers.

**SNMP Trap Server:** The service that enables PNE to receive alerts from the printer when its status changes. Once PNE receives the alert, PNE creates an instant status poll to reflect the change in the database pane. For instance, if you turn the printer offline, the printer sends an alert to PNE causing it to change the printer status instantly. In the database pane, the printer status changes to offline.

**NOTE:** The SNMP Trap Server works only if the printer's NIC is configured correctly using the Configure Print Servers utility. See Configure Print Servers on page 134.

**Web Server:** Allows you to view the active PNE using a web browser. See Web Access on page 111.

**NOTE:** If you want to use the Web Server service, you must also enable the XML Server service.

**XML Server:** PNE uses XML to communicate with its web server.

**Startup Tab**

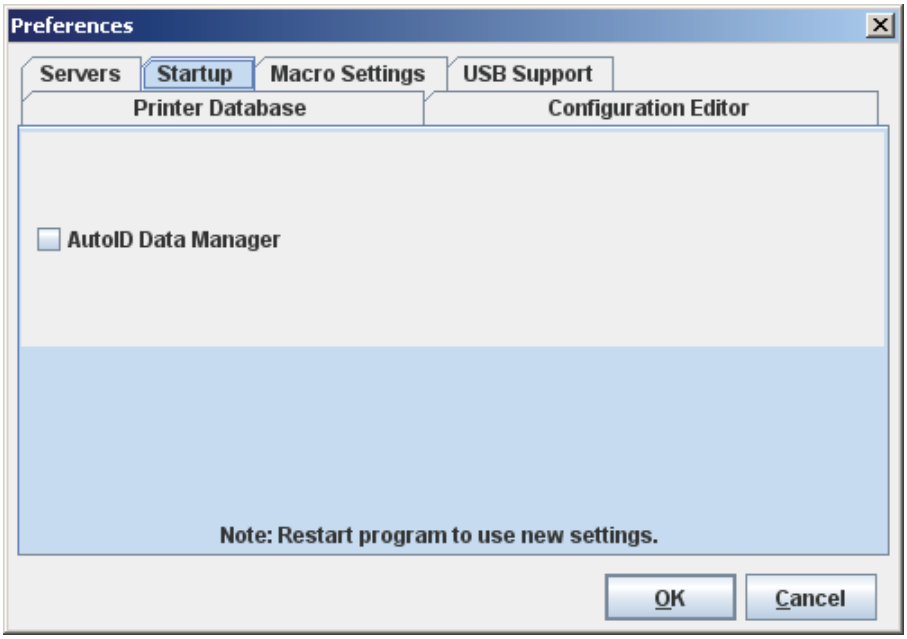



**Figure 13 Preferences: Startup Tab**

In the Startup tab, check the AutoID Data Manager check box to set the AutoID Data Manager (page 250) to launch automatically when PNE launches.

If you have added printers in the printer list (page 252), and the Run box is checked, the AutoID Data Manager will launch and begin collecting telemetry data automatically when PNE launches.

**NOTE:** You must restart PNE to use the new settings.

### Macro Settings Tab

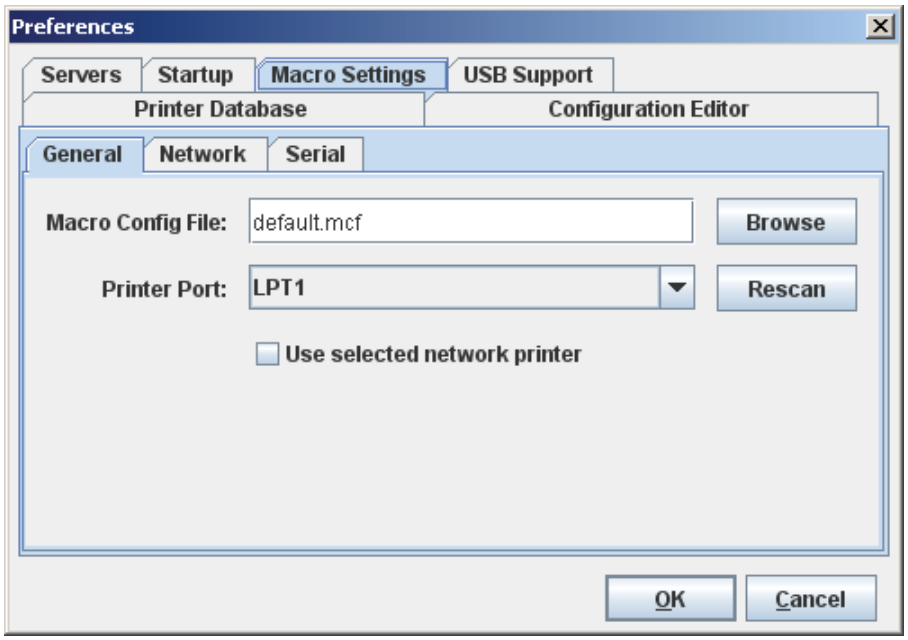



**Figure 14 Preferences: Macro Settings Tab – General Sub-Tab**

The Macro Settings tab has three sub-tabs: General, Network, and Serial. See Figure 14.

#### General Sub-Tab

**Macro Config File:** Displays the macro file that will load automatically when you start the macro utility. To select a new default macro config file, type it into the Macro Config File field, or click **Browse** to locate a file on your network.

**Printer Port:** Allows you to select the port that data is sent through. The choices vary according to the host computer. Possible choices include LPT1, LPT2, COM1, COM2, and Network.

If you select COM1 or COM2, click the **Serial** tab to further define printer parameters. If you select Network, click the **Network** tab to further define the network parameters.

- **Use selected network printer:** Check this box to send data directly to the network printer selected in the printer database. You do not need to further define network parameters.
- **Rescan:** Checks to see which ports are currently available on the host computer.

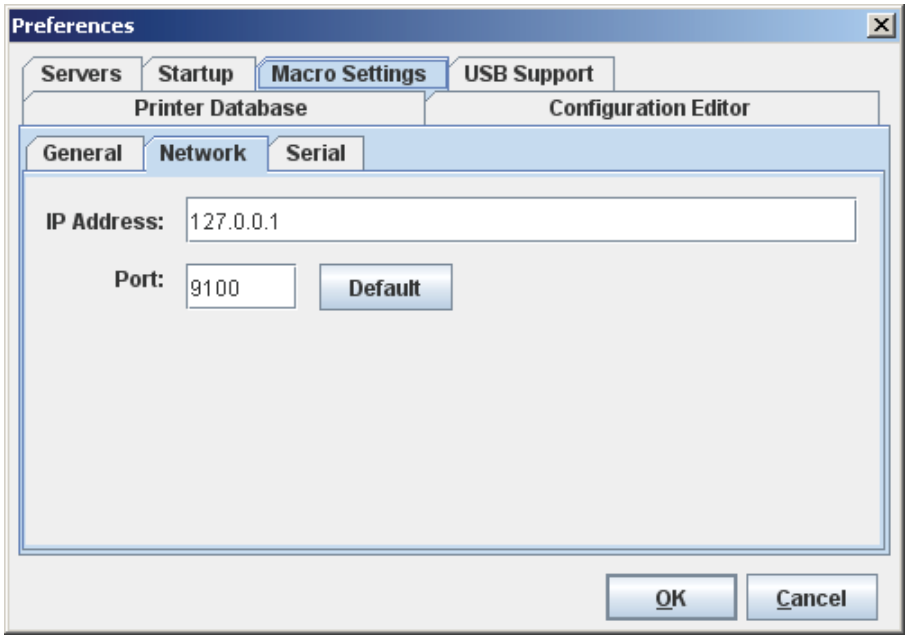



**Figure 15 Preferences: Macro Settings Tab – Network Sub-Tab**

**Network Sub-Tab**

Use the Network tab only when the Printer Port on the General tab is set to Network.

**IP Address:** The address of the printer where PNE will send the data.

**Port:** The port number that PNE will use to send the data. This must match the network interface card (NIC) of the printer where PNE will send the data. In most cases this is 9100, the default. If not, contact your system administrator.

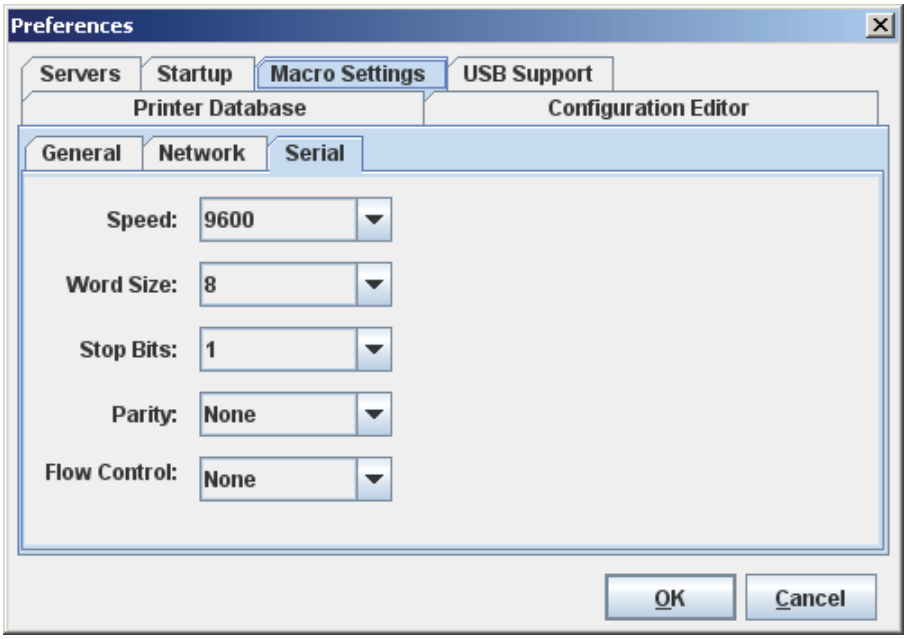



**Figure 16 Preferences: macro Settings Tab – Serial Sub-Tab**

**Serial Sub-Tab**

**Speed:** The baud rate at which data transfers. This setting must match the speed of the printer host serial port under the SERIAL PORT menu (thermal printers) or the SERIAL submenu in the HOST INTERFACE menu (all other printer models). See “Serial Port” (thermal) or “Host Interface” (all others) in your *User’s Manual*.

**Word Size:** The number of data bits per character. In most cases this should be set to 8.

**Stop Bits:** Inter-character gap. Can be set to 1 or 2. The normal setting is 1.

**Parity:** Adds an error checking bit if set to Odd or Even. The default is None. Other settings include Mark and Space.

**Flow Control:** Prevents data overrun by adjusting the sending side according to the needs of the receiving side.

- **None:** No adjustment occurs.
- **Rts/Cts in:** Hardware flow control on serial-input.
- **Rts/Cts out:** Hardware flow control on serial-output.
- **Xon/Xoff in:** Software flow control on serial-input using the X-on and X-off control characters.
- **Xon/Xoff out:** Software flow control on serial-output using the X-on and X-off control characters.

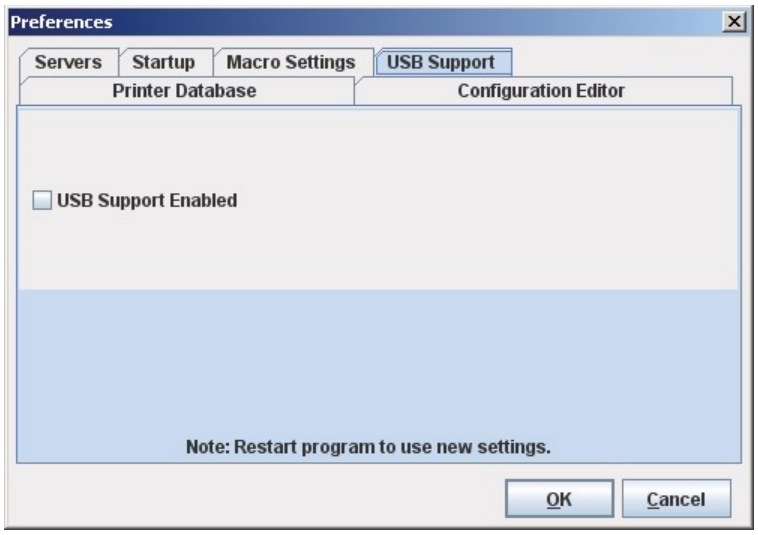



**Figure 17 Preferences: USB Support Tab**

USB support is disabled by default. It can be enabled by using the Preference setting under the File menu. In the Preference dialog, click the USB Support tab and make sure that the box “USB Support Enable” is checkmarked.

**IMPORTANT** **Restart PNE to enable the new USB setting.**

## The Edit Menu

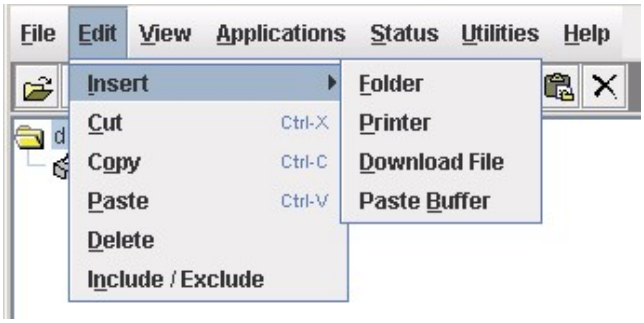



**Figure 18 Edit Menu**

Use the Edit option on the menu bar to build your database. The options in the Edit menu are described below.

### Insert

Adds a folder, printer, or Download file into your database. You must select an existing database item to create a folder, printer, or file. You can also paste the contents of the paste buffer (the last item that was copied or cut) into the database. The new icon appears one level below the selected database item. If there are items below the selected database item, the new item appears at the end.

Inserting an item involves three steps:

1. Select a database item. (The new icon will appear below the item you select.)
2. Define which type of icon you want to add. Select **Edit** Y **Insert** Y and then select the item you want to add. Or click the (insert new folder), (insert new printer), or (insert new Download file) icon.

   A new icon appears in the database.
3. Define what printer, folder, or file this icon represents.
   a. To define a printer, see Defining Printer Properties on page 56.
   b. To define a folder, double-click **New Folder**. The Folder Name dialog box opens. Type the name of the folder and click **OK**.
   c. To define a Download file, see File Download on page 80.

**Cut**

Removes selected folders, printers, or files from the database and places it in the paste buffer.

**Copy**

Copies selected folders, printers, or files from the database to the paste buffer, leaving the original intact.

**NOTE:** You can select multiple database items by using the **Ctrl** or **Shift** key.

**Paste**

Places the item in the paste buffer on the database tree. To paste, you must select a database item. The pasted item appears on the same level as the selected database item.

**NOTE:** If you select **Edit** Y **Paste**, the pasted item appears on the same level as the selected database item. However, if you select **Edit** Y **Insert** Y **Paste Buffer**, the pasted item appears one level below the selected database item.

**Delete**

Permanently removes a selected folder, printer, or file from the database.

**Include/Exclude**

Deactivates a selected folder, printer, or file. Inactive database items display a red circle with a slash through it on top of the item's icon.

You cannot send information to or receive information from excluded database items using the following Applications, Status, and Utilities menu options: Flash File Manager, File Download, Update Status, and Configure Print Servers.

To activate a database item, select the inactive item and then select

**Edit** Y **Include/Exclude**.

## The View Menu

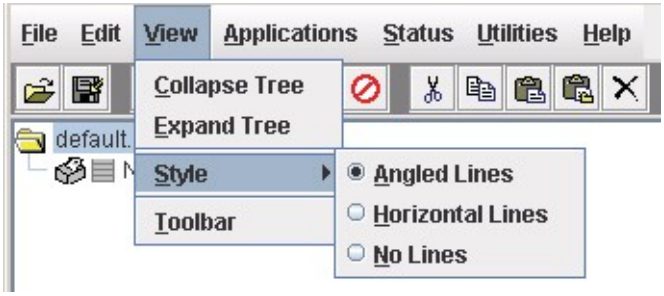



**Figure 19 View Menu**

### Collapse Tree

Collapses all folders on the database menu tree. Only the top level menu items display.

### Expand Tree

Expands all folders and printers on the database menu tree. All folders, printers, and Download files display.

**Style**

**Angled Lines:** Shows the links between database items using angled lines.

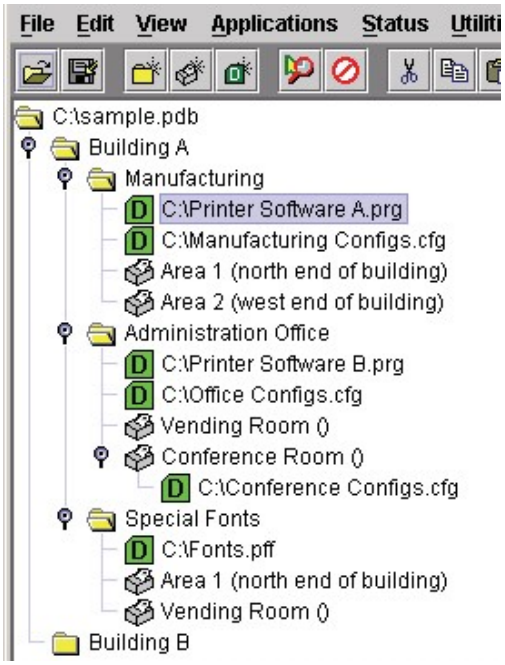



**Figure 20 Angled Lines**

**Horizontal Lines:** Shows the links between folders using horizontal lines.

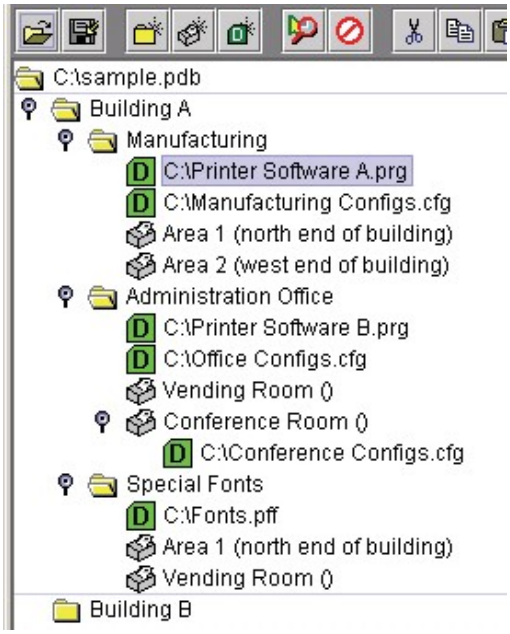



**Figure 21 Horizontal Lines**

**No Lines:** Shows no lines between database items.

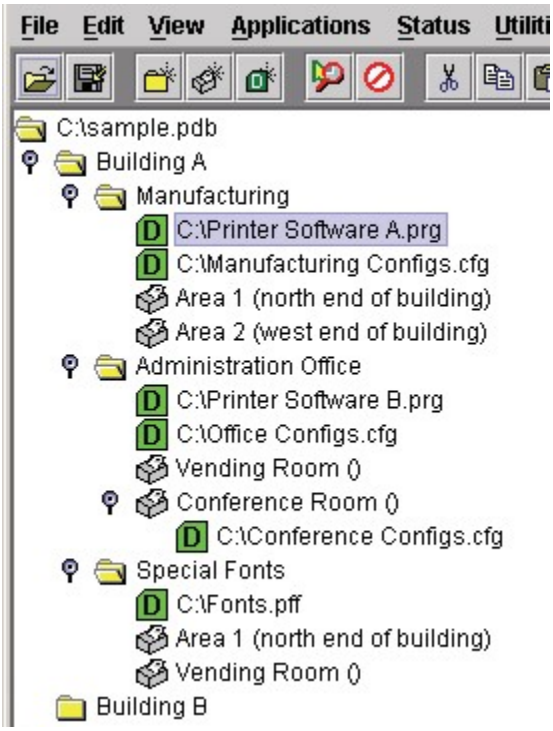



**Figure 22 No Lines**

**Toolbar**

Allows you to select which buttons display on the toolbar.

**NOTE:** By default, some icons do not appear in the toolbar.

For a description of the toolbar icons, see The Toolbar on page 54.

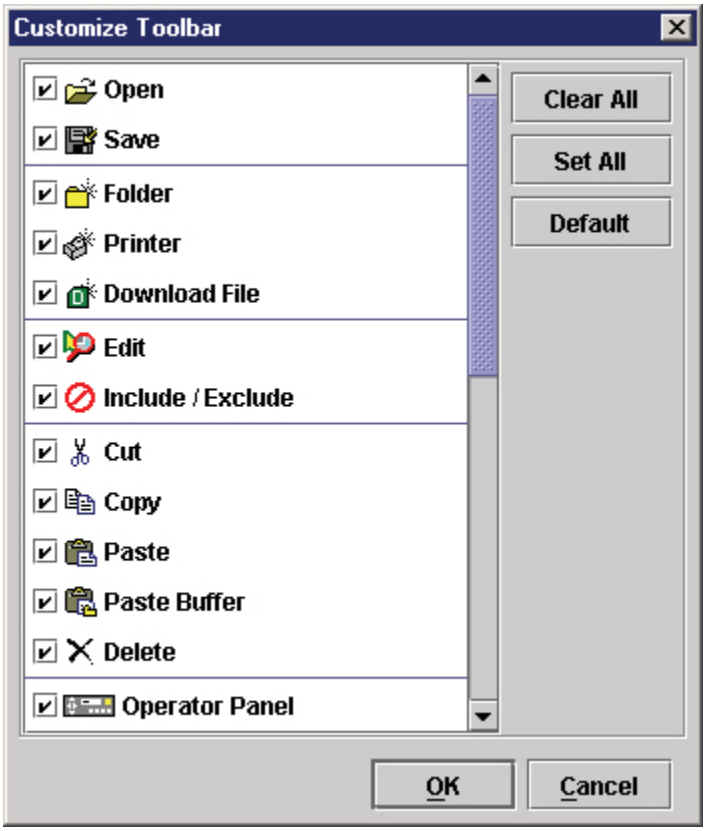



**Figure 23 Customize Toolbar**

## The Applications Menu

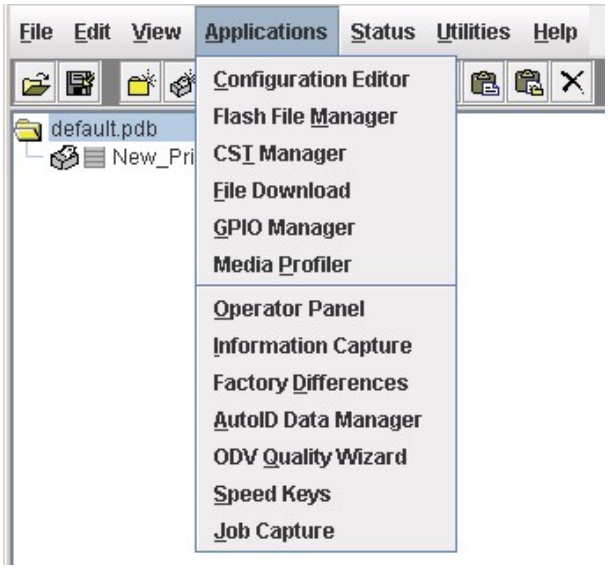



**Figure 24 Applications Menu**

For an explanation of the Applications menu options, find the menu option in Table 2 and go to the corresponding page.

**Table 2 Applications Menu Options**

| Menu Option | Page |
|---|---|
| Configuration Editor | page 65 |
| Flash File Manager | page 77 |
| CST Manager | page 136 |
| File Download | page 80 |
| GPIO Manager | page 183 |
| Media Profiler | page 90 |
| Operator Panel | page 97 |
| Information Capture | page 103 |
| Factory Differences | page 73 |
| AutoID Data Manager | page 250 |
| ODV Quality Wizard | page 106 |
| Speed Keys | page 107 |
| Job Capture | page 108 |

## The Status Menu

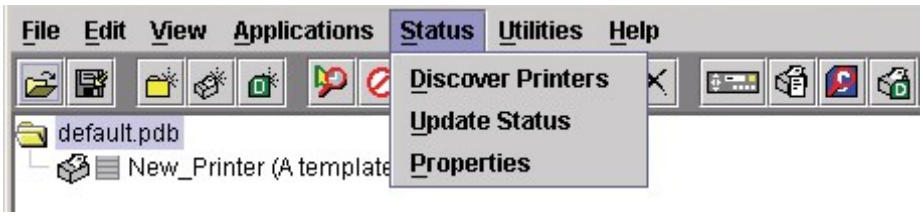



**Figure 25 Status Menu**

### Discover Printers

To search for printers on a network, select **Status** Y **Discover Printers**, or click the **Discover Printers** button at the far right of the toolbar. The results of the search display in the database pane.

Discover Printers searches for printers on a network based on the settings specified in the Discovery tab of the Status Monitoring Properties dialog box. The next section explains how to configure your search.

### Properties

Select **Status** Y **Properties** to open the Status Monitoring Properties dialog box. The dialog box contains three tabs: Discovery, Polling, and Alert Delivery.

**NOTE:** To enable printer discovery, check the **Enable Printer Discovery** check box.

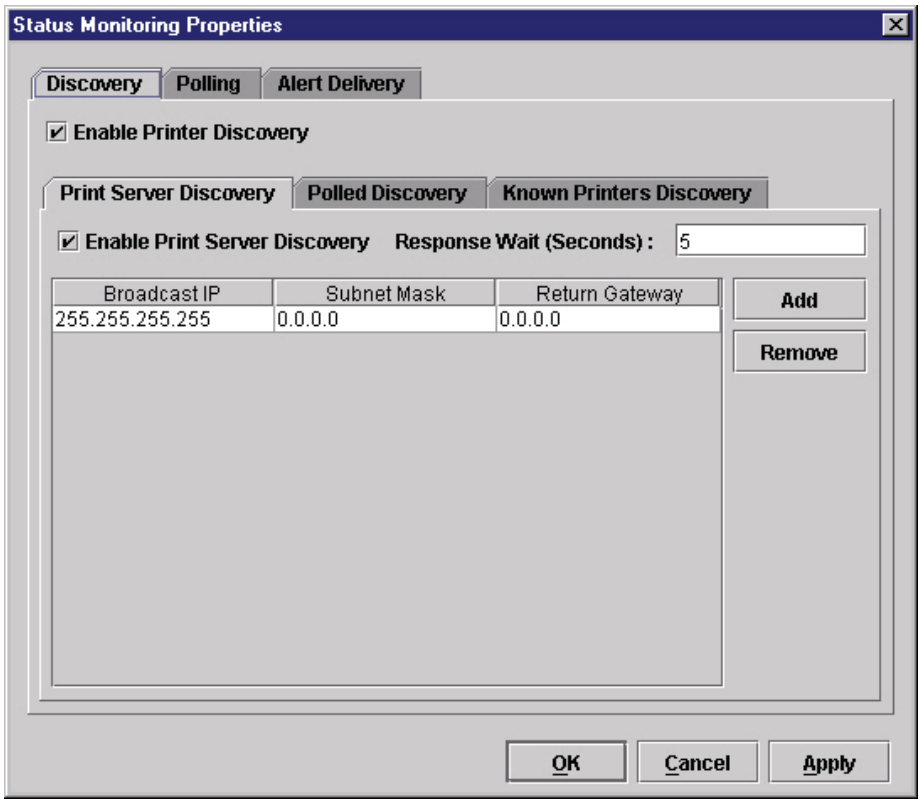



**Figure 26 Status Monitoring Properties: Discovery Tab – Print Server Discovery Sub-Tab**

### Discovery Tab

You can discover printers on a network in three ways:

1. **Print Server Discovery:** This option allows you to discover all PrintNet® printers on a subnet. To enable the option, check the **Enable Print Server Discovery** check box in the Status Monitoring Properties dialog box (see Figure 26), then click **Apply** or **OK**.

   **Response Wait (Seconds):** To specify the time delay (in seconds) PNE waits for a printer response. By default, the value is set at 5 seconds.

   **Broadcast IP**, **Subnet Mask**, and **Return Gateway:** These settings must match your network configuration. See your system administrator.

**NOTE:** To discover unconfigured NICs, you must enter the Gateway Address and Subnet Mask in the Return Gateway field.

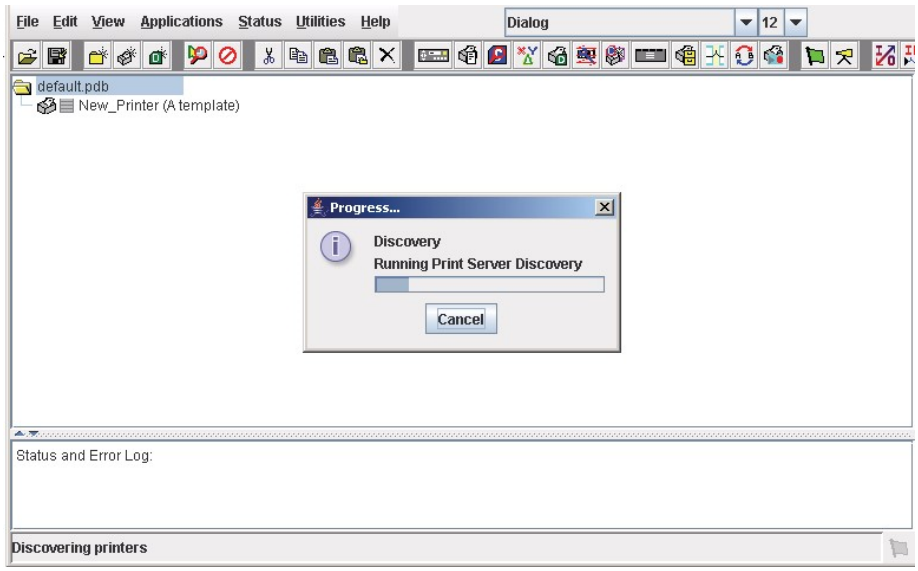



**Figure 27 Print Server Discovery in Progress**

If Enable Print Server Discovery is enabled, a progress indicator displays while PNE discovers printers. See Figure 27.

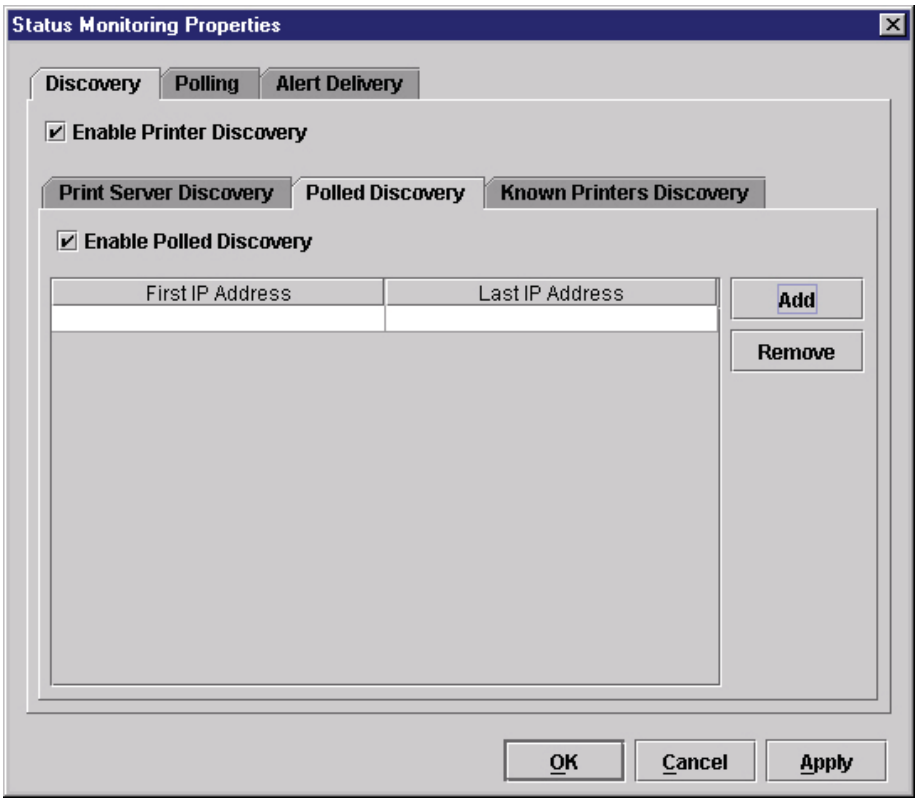



**Figure 28 Status Monitoring Properties: Discovery Tab – Polled discovery Sub-Tab**

2. **Polled Discovery:** This option allows you to select a range of IP addresses to poll. To enable the option, click the **Polled Discovery** tab and check the **Enable Polled Discovery** check box, then click **Add** (see Figure 28). In the First IP Address field, enter the first IP address of your desired range. In the Last IP Address field, enter the last IP address. Click **Apply** or **OK**. PNE polls the printers within your specified range and displays the results in the database pane.

   If Polled Discovery is enabled, a progress indicator displays while PNE discovers printers. See Figure 29.

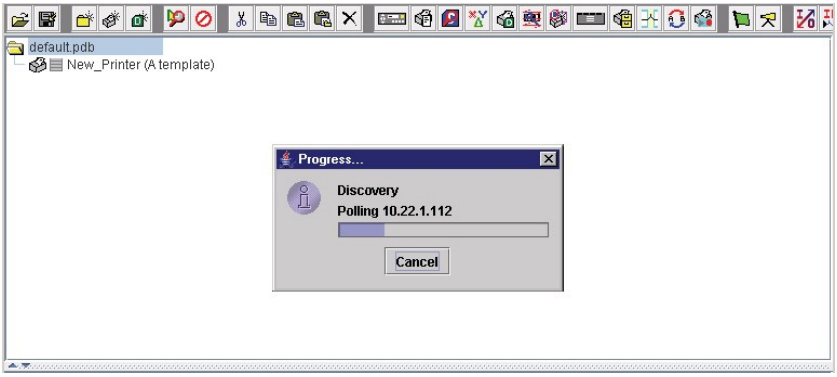



**Figure 29 Polled Discovery in Progress**

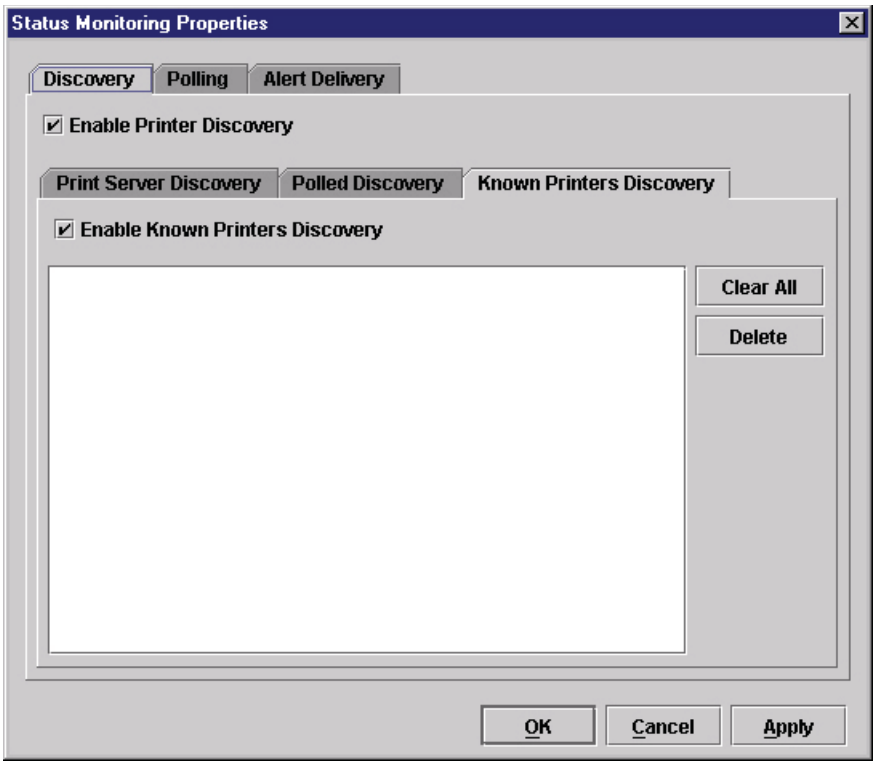



**Figure 30 Status Monitoring Properties: Discovery Tab – Known Printers Discovery Sub-Tab**

3. **Known Printers Discovery:** This option logs previously discovered printer IP addresses. From this log, you can select and delete previously polled discoveries to create a new polling list to target your printer search. To enable the option, click the **Known Printers Discovery** tab and check the **Enable Known Printers Discovery** check box (see Figure 30). From the polled list of IP addresses, refine your search by keeping or deleting found IP addresses. Click **Apply** or **OK** to start a new poll based on your specification.

**NOTE:** You cannot manually add an IP address to this list. If you delete an IP address, it is lost until it is rediscovered.

If Known Printers Discovery is enabled, a progress indicator displays while PNE discovers printers. See Figure 31.

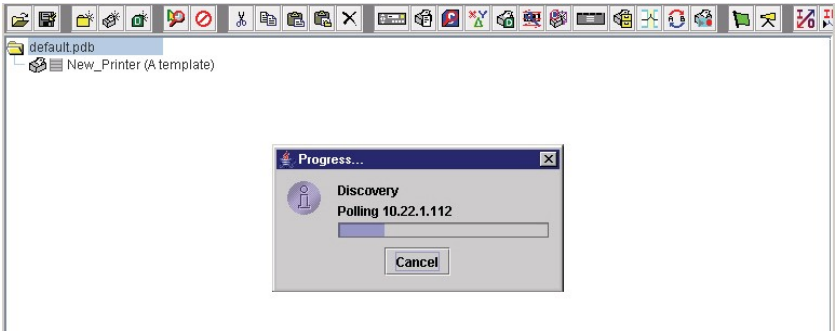



**Figure 31 Known Printers Discovery in Progress**

### Polling Tab

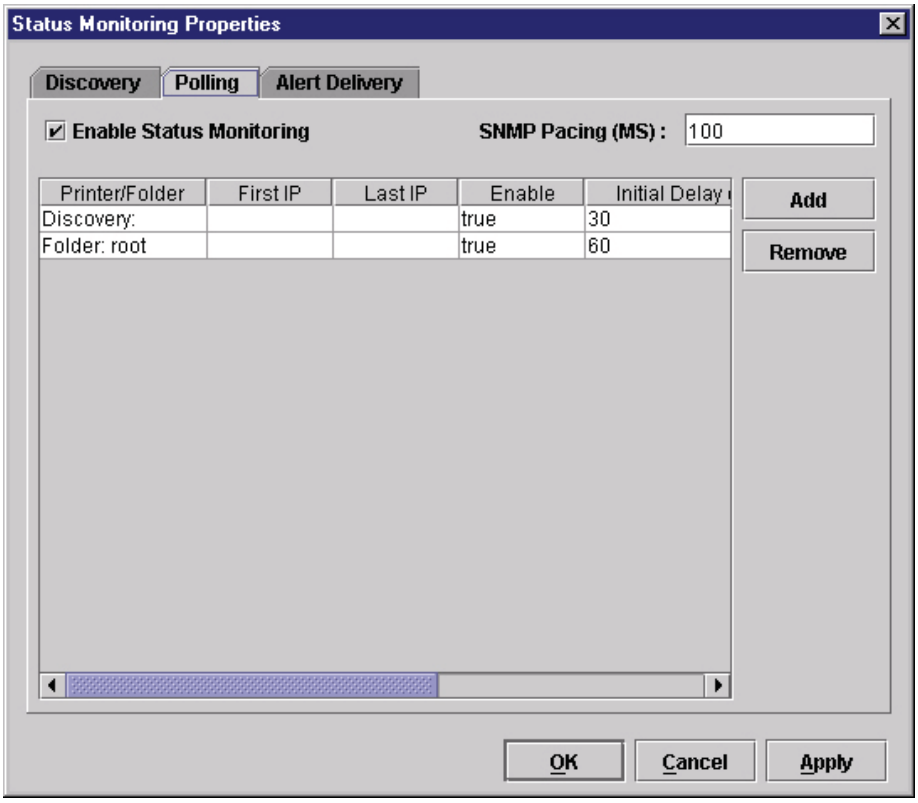



**Figure 32 Status Monitoring Properties: Polling Tab**

The Polling option allows you to control the way PNE polls printers on the network. For instance, you can create a timed interval for PNE to poll every 30 seconds or every two minutes. You can also specify a range of IP addresses.

To enable the option, check the **Enable Status Monitoring** check box in the Polling tab (see Figure 32). The SNMP Pacing (MS) value places a delay between each SNMP request. This feature minimizes the network load. By default, the value is set at 100 milliseconds (.1 second).

**NOTE:** If Discovery is enabled, then a discovery also occurs, based upon the settings in the Discovery tab (see Discovery Tab on page 42).

Now you can set parameters to a new task. The parameters include:

**Printer/Folder:** To select which printer or folder you want PNE to poll. Click the field to select options from a drop-down menu.

**First IP:** To set the beginning IP address in a polling range. Use this option if you select **Range:** as the Printer/Folder option.

**Last IP:** To set the last IP address in a polling range. Use this option if you select **Range:** as the Printer/Folder option.

**Enable:** To select whether or not you want to enable polling of a specific task. If you want PNE to poll the printers according to the specifications of your first task, select **true**. Otherwise, select **false**.

**Initial Delay (S):** To specify the time delay from when PNE starts to when PNE polls printers. The time delay is calculated in seconds.

**Polled Interval (S):** To poll printers automatically with timed intervals calculated in seconds. Use this option to periodically poll for new printers every few seconds.

**Response Wait (MS):** To specify the time delay PNE waits between SNMP responses. By default, the value is set at 300 milliseconds (.3 seconds).

**NOTE:** If your network is overloaded and the responses are slow, you may not receive a response with the default setting. In this case, increase your Response Wait (MS) value.

**NOTE:** If you enter a low value for slow networks, you may receive no response. In this case, increase the Response Wait (MS) value.

### Alert Delivery Tab

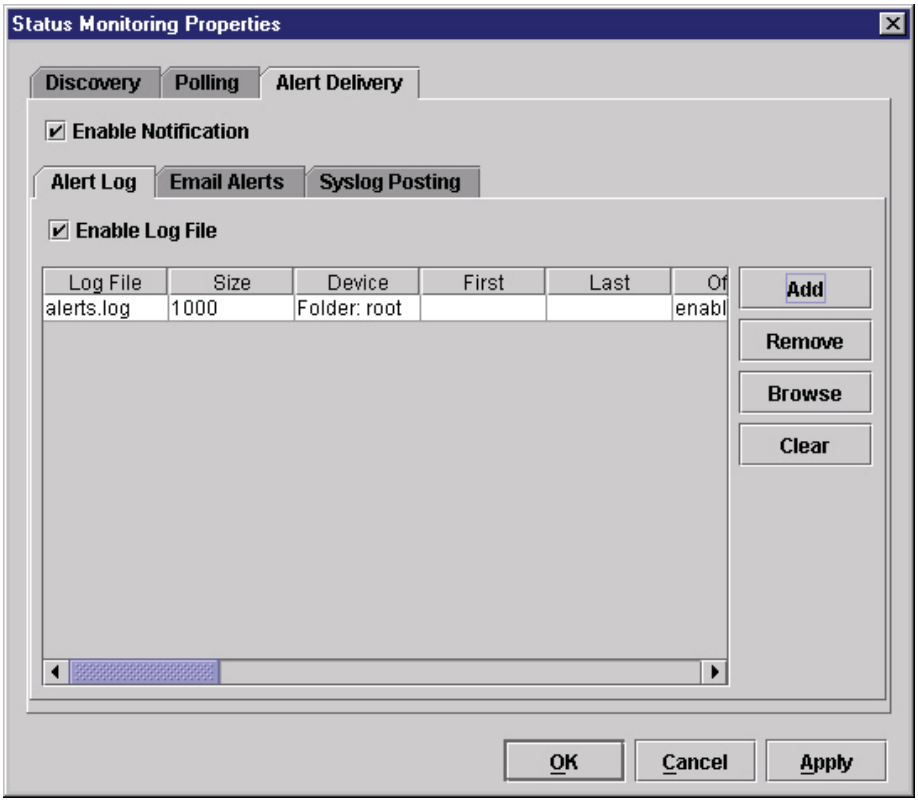



**Figure 33 Status Monitoring Properties: Alert Delivery Tab – Alert Log Sub-Tab**

Select **Status** Y **Properties** to open the Status Monitoring Properties dialog box. Click the **Alert Delivery** tab. Check the **Enable Notification** check box to enable the option. The Alert Delivery properties allow you to customize the way PNE notifies you of potential printer errors. Descriptions of the three alert types follows:

1. **Alert Log:** Allows PNE to log alerts to a file located in the PNE installation directory. To log alerts, check the **Enable Log File** check box, then click **Add** (see Figure 33). A task item adds to the log list. In the task item, specify the following as applicable, then click **Apply** or **OK**.

**Log File:** To name the log file. The default file name is **alerts.log**.

**Size:** To set the maximum file size, in bytes. The default (and minimum required) size is 1000 bytes.

**Device:** To choose a device item you want PNE to monitor, such as a folder, specific printer, or a range of IP addresses.

**First:** To set the beginning IP address in a polling range. Use this option if you select **Range:** as the Device option.

**Last:** To set the last IP address in a polling range. Use this option if you select **Range:** as the Device option.

**NOTE:** In the remaining alert option fields, select **enable** or **disable** as desired.

**Offline**, **Warning**, **Media Input**, **Media Output**, **Media Path**, **Marker**, **Cutter**, **Barcode**, **RFID, Scanner**, **Label**, **Intervention Needed**, **Consumables**, and **Power Cart:** For a description of the alert groups and printer events, refer to "Alert Groups" in the SNMP Configuration section of chapter three in the *Network Interface Card User's Manual*. All options are enabled by default.

To set up alert groups on the NIC, see Configure Print Servers on page 134.

**Comment:** Enter comments as needed.

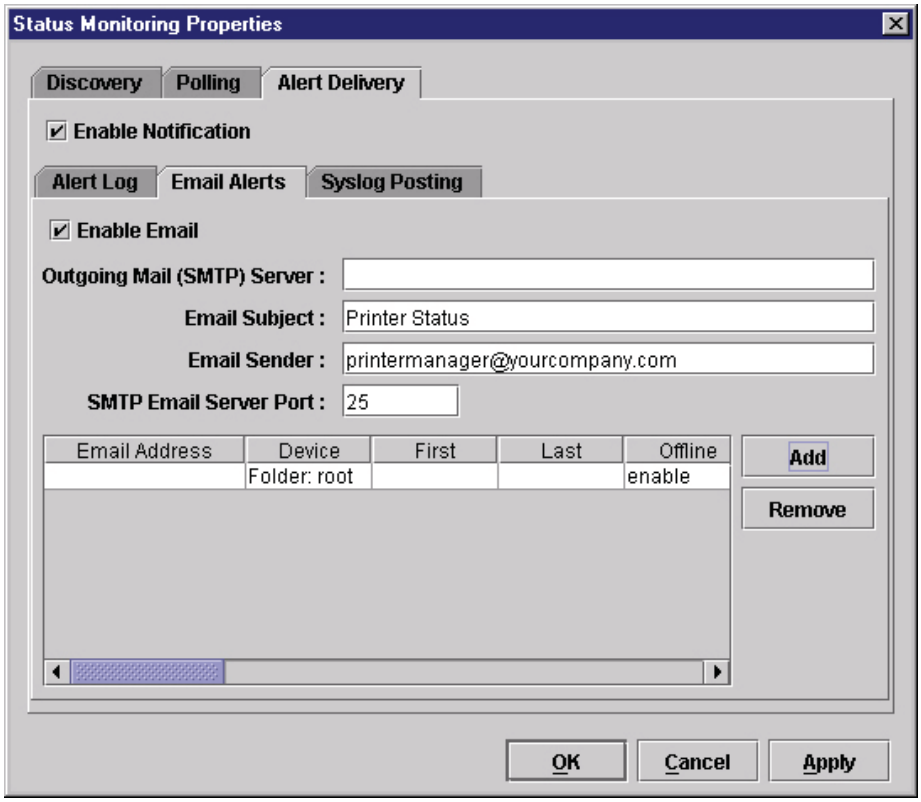



**Figure 34 Status Monitoring Properties: Alert Delivery Tab – Email Alerts Sub-Tab**

2. **Email Alerts:** PNE sends you an alert e-mail if a printer error occurs. To set up Email Alerts, check the **Enable Email** check box. Enter information in the following fields:

**Outgoing Mail (SMTP) Server:** See your system administrator.

**Email Subject:** Enter the subject of e-mail.

**Email Sender:** Enter your e-mail address.

**SMTP Email Server Port:** See your system administrator.

Next, click **Add** to define a new task (see Figure 34). In the new task item, specify the following information, then click **Apply** or **OK**.

**Email Address:** Enter the e-mail address where you want PNE to send the alert messages.

**Device:** To choose a device item you want PNE to monitor, such as a folder, specific printer, or a range of IP addresses.

**First:** To set the beginning IP address in a polling range. Use this option if you select **Range:** as the Device option.

**Last:** To set the last IP address in a polling range. Use this option if you select **Range:** as the Device option.

**NOTE:** In the remaining alert option fields, select **enable** or **disable** as desired.

**Offline**, **Warning**, **Media Input**, **Media Output**, **Media Path**, **Marker**, **Cutter**, **Barcode**, **RFID, Scanner**, **Label**, **Intervention Needed**, **Consumables**, and **Power Cart:** For a description of the alert groups and printer events, refer to “Alert Groups” in the SNMP Configuration section of chapter three in the *Network Interface Card User’s Manual*. All options are enabled by default.

**Comment:** Enter comments as needed.

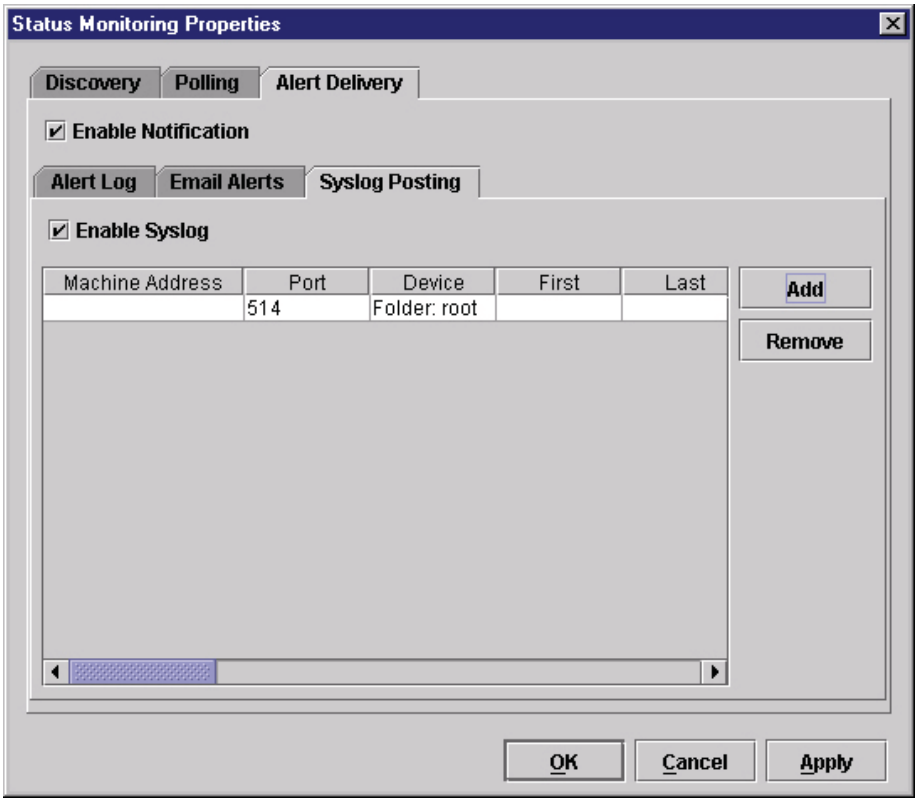



**Figure 35 Status Monitoring Properties: Alert Delivery Tab – Syslog posting Sub-Tab**

3. **Syslog Posting:** Used in a UNIX operating system, it allows PNE to log alerts to a file located in the PNE installation directory. To log alerts, check the **Enable Syslog** check box, then click **Add** (see Figure 35). A task item adds to the log list. In the task item, specify the following as applicable, then click **Apply** or **OK**.

**Machine Address:** The UNIX IP Address.

**Port:** See your system administrator.

**Device:** To choose a device item that you want PNE to monitor, such as a folder, specific printer, or a range of IP addresses.

**First:** To set the beginning IP address in a polling range. Use this option if you select **Range:** as the Device option.

**Last:** To set the last IP address in a polling range. Use this option if you select **Range:** as the Device option.

**NOTE:** In the remaining alert option fields, select **enable** or **disable** as desired.

**Offline**, **Warning**, **Media Input**, **Media Output**, **Media Path**, **Marker**, **Cutter**, **Barcode**, **RFID, Scanner**, **Label**, **Intervention Needed**, **Consumables**, and **Power Cart:** For a description of the alert groups and printer events, refer to “Alert Groups” in the SNMP Configuration section of chapter three in the *Network Interface Card User’s Manual*. All options are enabled by default.

**Comment:** Enter comments as needed.

### Update Status

Update Status shows the condition of the printer at the time the status is checked. To update the status of a printer, select **Status** Y **Update Status**, or click the (green flag) button at the right of the toolbar.

Figure 36 shows a printer with a wireless NIC that uses two ports. The (signal strength) icon represents the wireless port, while the (ethernet port) icon represents the ethernet port.

The printer’s model number, if available, displays in brackets following the printer icons. Current OEM printers display the OEM’s model number if it is placed in the Printer MIB. Future OEM printers (rebranded Printronix printers), will not show the model number or the brackets after the printer icons.

The printer name is a user defined field that is used to distinguish a printer in the database. This field can be modified in the Printer Properties dialog box under the Identification tab. The name chosen must be unique from all the other printer names in the database and must use printable ASCII characters.

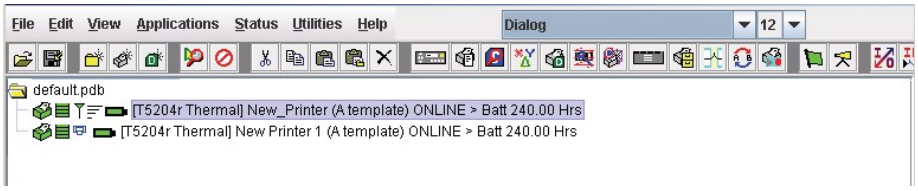



**Figure 36 Update Status**

When the printer status updates, the (printer) icon may change color:

- Green indicates the printer is online, functioning properly, and can print
- Yellow indicates a warning, but the printer can print
- Red indicates the printer is offline or not functioning properly and cannot print
- Grey indicates that the printer is not recognized

The message to the right of the printer description is identical to the message on the operator panel.

If you enable status polling, the printer status updates automatically.

The (ribbon supply) icon indicates the amount of ribbon remaining on the printer.

- Green indicates a full or nearly full ribbon supply

- Yellow indicates a moderate ribbon supply
- Red indicates a small or no ribbon supply
- Grey indicates one of the following:
    - The ribbon supply feature is not supported on the printer
    - For thermal printers, the printer is not using ribbon but rather direct thermal
    - For thermal printers, the printer has not printed since it was powered on, so PNE cannot determine the amount of ribbon remaining
    - For line matrix printers, the printer was powered on with a fault condition (not allowing the ribbon to be activated), so PNE cannot determine the amount of ribbon remaining
    - For line matrix printers, the amount of ribbon remaining has reached 0% (you can still print depending on the operator panel settings)

**NOTE:** The following three icons appear only if the features are installed.

The (signal strength) icon indicates the strength of the radio signal.

- Green with three or four bars indicates a strong signal
- Yellow with two bars indicates a moderate signal
- Red with one bar indicates a weak or non-existent signal

The (ethernet port) icon always remains blue, since it represents an ethernet connection.

The (battery power) icon indicates the percentage of available battery power.

- Green indicates the battery has 61% to 100% available power
- Yellow indicates the battery has 20% to 60% available power
- Red indicates the battery has less than 20% available power

Place the pointer over the , , or icon to obtain status information about the feature. See Figure 37, Figure 38, and Figure 39 on pages 51 and 52.

**NOTE:** No information displays if you place the pointer over the icon.

The status information provided by PrintNet Enterprise varies based on the printer mode and/or the printer connection method. All USB connected printers will not have its status updated. To see the current printer status, use the virtual front panel. For T2N printer models, only basic status information will be available: Online or Offline.

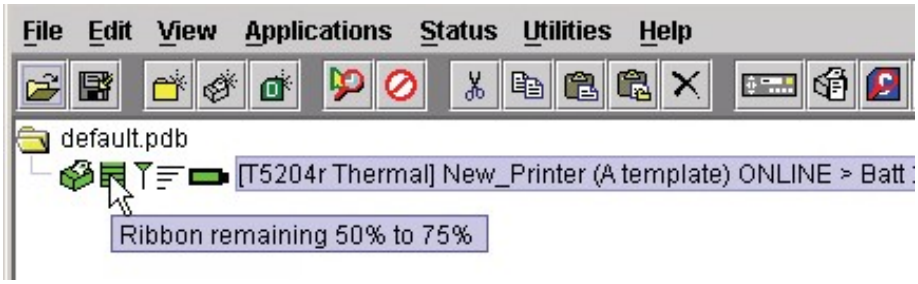



**Figure 37 The Ribbon Supply Icon**

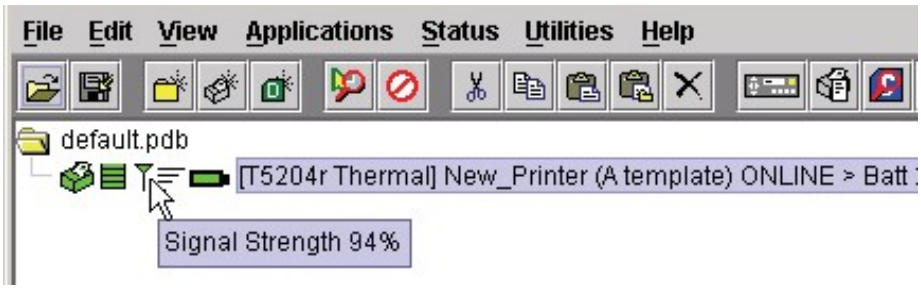



**Figure 38 The Signal Strength Icon**

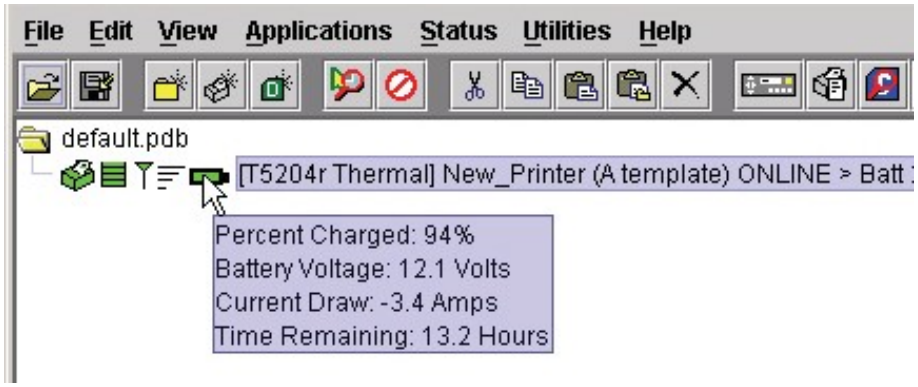



**Figure 39 The Battery Power Icon**

## The Utilities Menu

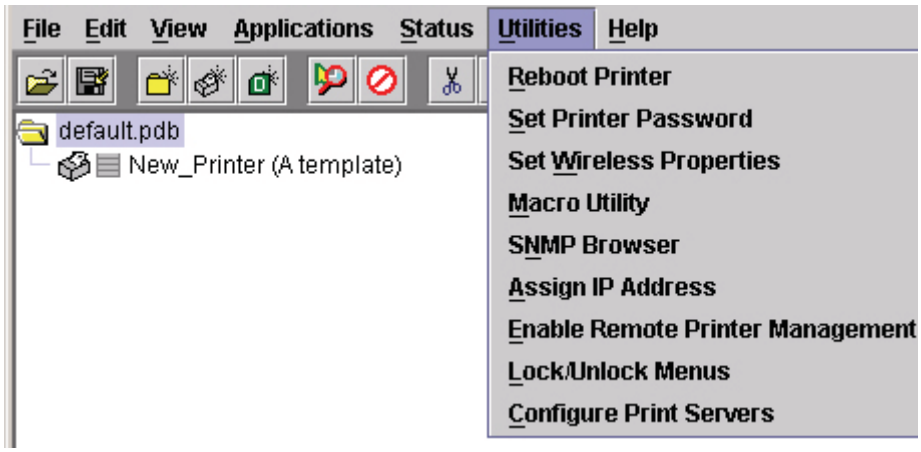



**Figure 40 Utilities Menu**

For an explanation of the Utilities menu options, find the menu option in Table 2 and go to the corresponding page.

**Table 3 Utilities Menu Options**

| Menu Option | Page |
|---|---|
| Reboot Printer | page 119 |
| Set Printer Password | page 119 |
| Set Wireless Properties | page 120 |
| Macro Utility | page 126 |
| SNMP Browser | page 130 |
| Assign IP Address | page 131 |
| Enable Remote Printer Management | page 132 |
| Lock/Unlock Menus | page 133 |
| Configure Print Servers | page 134 |

## The Help Menu

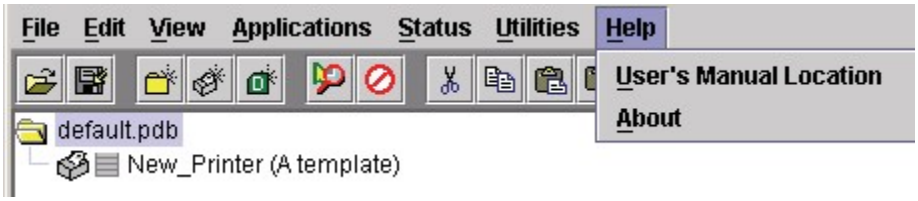



**Figure 41 Help Menu**

### User's Manual Location

Displays the User's Manual Location dialog box. This dialog box tells you where to find the PNE user's manual PDF file.

### About

Displays the About dialog box. The About dialog box shows the PNE program's version information and part number, and the Java version number.

# The Toolbar

The PNE toolbar contains buttons that perform functions. See below for a description of each button. Refer to the specified page for a more detailed description.

You can select which buttons display on the toolbar. See page 39.

| Button | Description |
|---|---|
| | **Open:** Opens a different printer database. |
| | **Save:** Saves the current printer database. |
| | **Folder:** Inserts a new folder into the printer database (page 34). |
| | **Printer:** Inserts a new printer into the database (page 34). |
| | **Download File:** Inserts a new Download file into the database (page 34). |
| | **Edit:** Defines the properties of the selected item (page 56). |
| | **Include/Exclude:** Deactivates a selected folder, printer, or file (page 35). |
| | **Cut:** Removes a selected folder, printer, or file from the database and places it in the paste buffer (page 35). |
| | **Copy:** Copies a selected folder, printer, or file to the paste buffer (page 35). |
| | **Paste After:** Pastes the item in the paste buffer after the selected item (page 35). |
| | **Paste Into:** Pastes the item in the paste buffer into the selected item (page 35). |
| | **Delete:** Removes the selected item (page 35_bookmark87). |
| | **Operator Panel:** Virtual operator panel that allows you to make selections via PNE as if you are using the physical operator panel (page 97). |
| | **Information Capture:** Allows PNE to capture information sent between the computer and the printer (page 103). |
| | **Configuration Editor:** Allows you to edit the data sent from the computer to the printer before the printer receives it (page 65). |

| Button | Description |
|---|---|
| | **Find Differences:** Allows you to find the differences from the factory settings for all configurations (page 73). |
| | **File Download:** Allows you to download a configuration, firmware, or flash file to the printer (page 80). |
| | **ODV Quality Wizard:** Opens the ODV Quality Wizard window (page 106j). |
| | **Configure Print Servers:** Opens the Configure Print Servers window (page 134). |
| | **Speed Keys:** Opens the Speed Keys window (page 107). |
| | **Flash File Manager:** Opens the Flash File Manager window (page 77). |
| | **Media Profiler:** Opens the Media Profiler window (page 90). |
| | **CST Manager:** Opens the CST Manager window (page 136). |
| | **Job Capture:** Opens the Job Capture window (page 108). |
| | **Macro Utility:** Opens the Macro Utility window (page 126). |
| | **Update Status:** Marks a printer or printers for status updates (page 50). |
| | **Discover Printers:** Searches for new printers (page 41). |
| | **GPIO Manager:** Opens the GPIO Manager window (page 183). |
| | **AutoID Data Manager:** Opens the AutoID Data Manager window (page 250). |

# Managing the Database

To organize your databases easily and effectively, use the Edit option on the printer database menu bar. You can add, delete, and assign printers, configuration files, and download files to your database tree. You can also organize them using folders. All Edit menu functions have buttons on the toolbar (see page 54).

## Database Items

**Folder:** Use folders to group the elements of your database.

**Printer:** See Defining Printer Properties on page 56.

**Download file:** A flash file or a configuration file (created in the Configuration Editor which is described on page 65) stored on your host computer.

A flash file contains information (e.g., the printer's firmware file or a font file) that you can download to the flash SIMM memory of a printer or group of printers.

A configuration file contains user-defined printer configurations that you can download to your printer using either the printer database or the Configuration Editor.

For information about Download files, see File Download on page 80.

## Defining Printer Properties

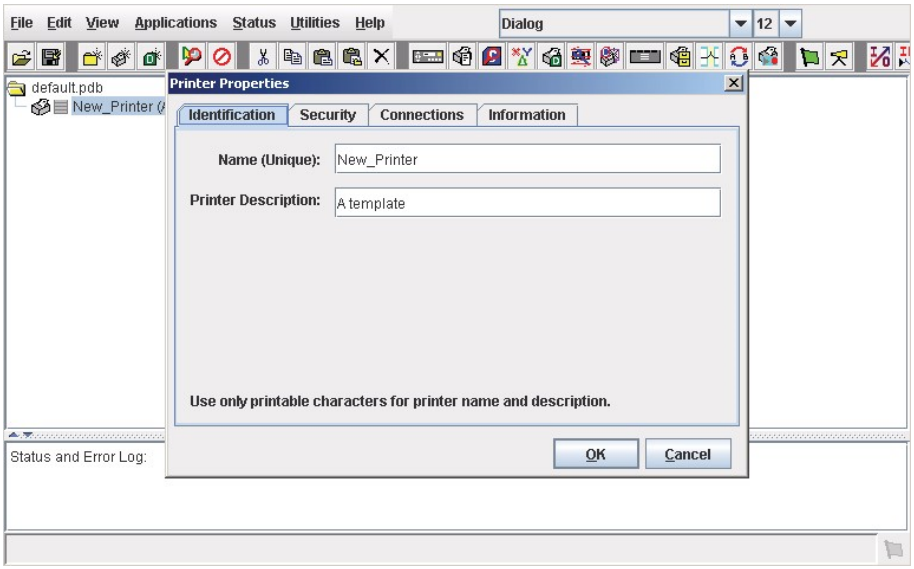



**Figure 42 Defining Printer Properties**

Before you can use any of the PNE applications, you must define the printer's properties. You must identify the printer and configure how the printer communicates with PNE. To define a printer, double-click the printer's name or click the (edit database entry) button. The first time you run PNE, double-click **New_Printer (A template)**. The Printer Properties dialog box opens. See Figure 42.

The Printer Properties dialog box contains four tabs: Identification, Security, Connections, and Information, described in the next sections.

If the printer is USB connected, the Printer Properties dialog box displays the Security tab only. See Figure 43.

**Figure 43 Defining Printer Properties for a USB Connected Printer**

### Identification Tab

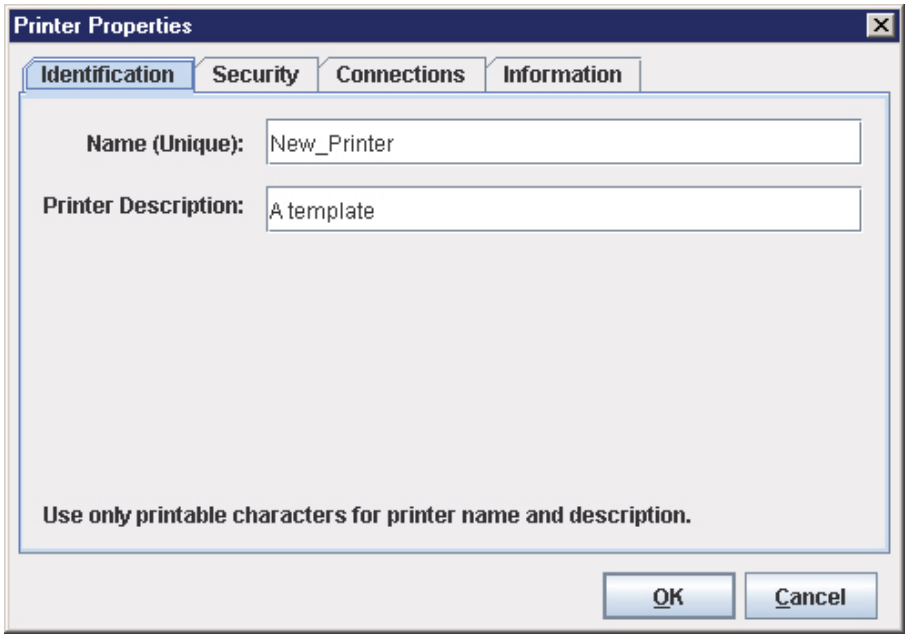



**Figure 44 Printer Properties: Identification Tab**

**Name (Unique)/Printer Description:** Assigns a name to your printer to identify it in the printer database. You can also assign a printer description, which appears in parentheses to the right of the printer name in the database.

When you assign a printer name and description, use only printable characters. Spaces may be used to separate words.

### Security Tab

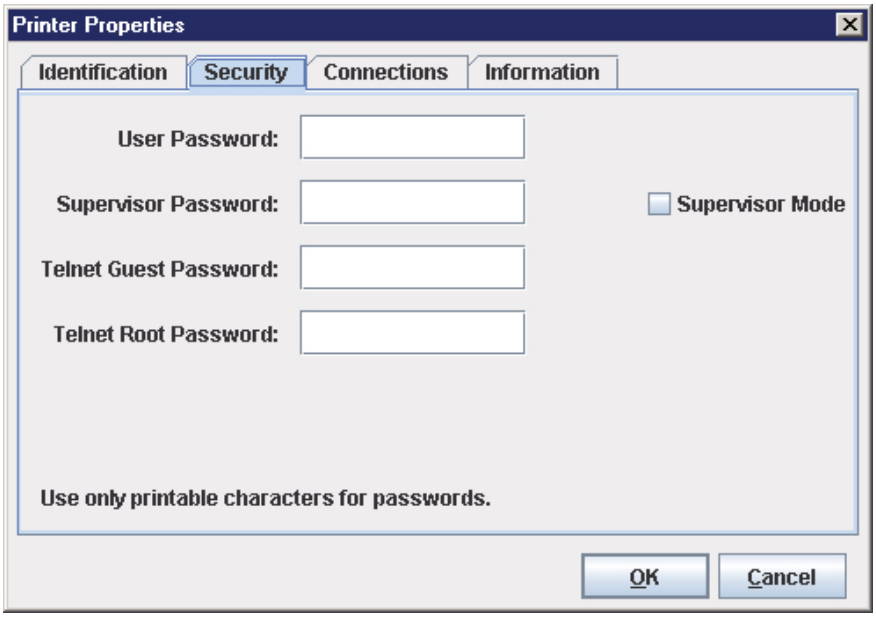



**Figure 45 Printer Properties: Security Tab**

**User/Supervisor Password:** Enter the printer's password, if appropriate. The password feature restricts access to certain functions of PNE. In User mode, PNE does not allow the following functions: downloading files, configurations, or configuration names to the printer; clearing the error log; and setting passwords. Supervisor mode allows unrestricted access to all functions of PNE.

User and Supervisor passwords are only recognized up to 9 characters, and are displayed as *****, one * for each character typed. Use only printable characters for passwords. Spaces may be used to separate words. To set up a password, see Set Printer Password on page 119.

**Telnet Guest Password:** PNE uses Telnet to read various printer settings.

**IMPORTANT** **If you change the Telnet guest password, click OK and then the (green flag) button (or select Status Y Update Status).**.

**Telnet Root Password:** PNE uses Telnet to update various printer settings.

**IMPORTANT** **If you change the Telnet root password, click OK and then the (green flag) button (or select Status Y Update Status).**.

### Telnet Guest Password Errors

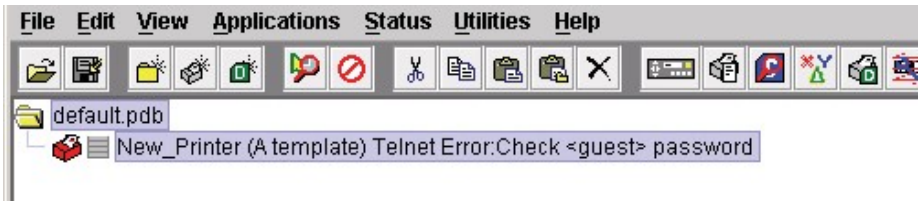



**Figure 46 Telnet Guest Password Error: Polling the Printer Status**

PNE uses Telnet to poll the printer status. If your printer reports a Telnet error (see Figure 46), enter the password for the user **guest** (page 58).

See your system administrator.

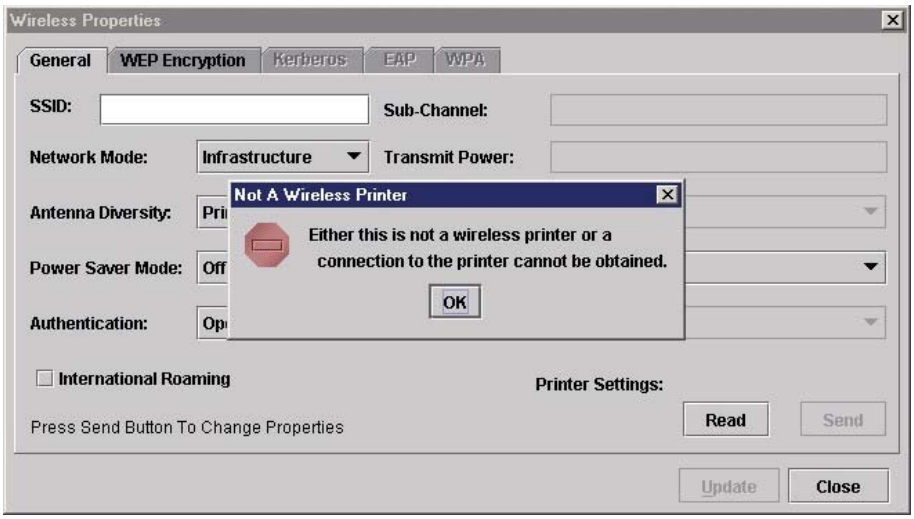



**Figure 47 Telnet Guest Password Error: Reading Wireless Setting**

PNE also uses Telnet to read wireless printer settings (page 120). If PNE reports a Telnet error when attempting to read wireless printer settings (see Figure 47), enter the password for the user **guest** (page 58).

See your system administrator.

### Telnet Root Password Errors

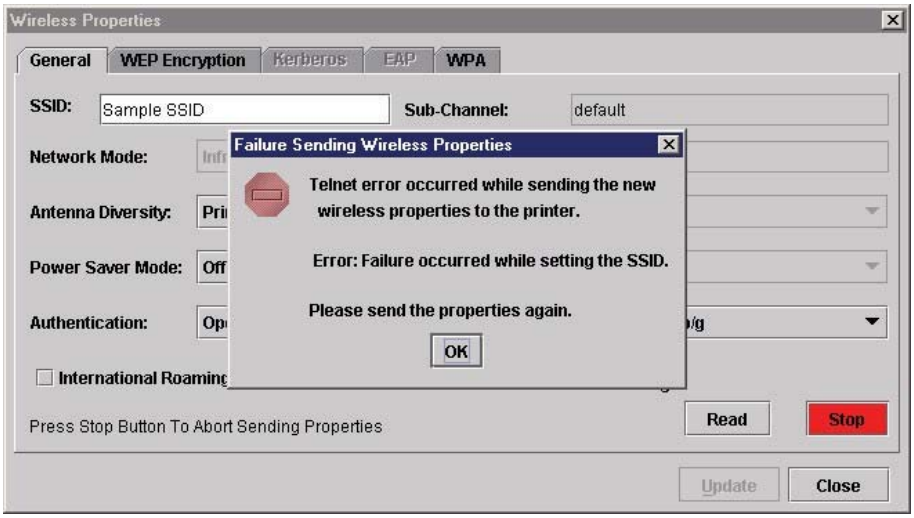



**Figure 48 Telnet Root Password Error**

If PNE reports a Telnet error when attempting to update wireless printer settings (see Figure 48), enter the password for the user **root** (page 58).

See your system administrator.

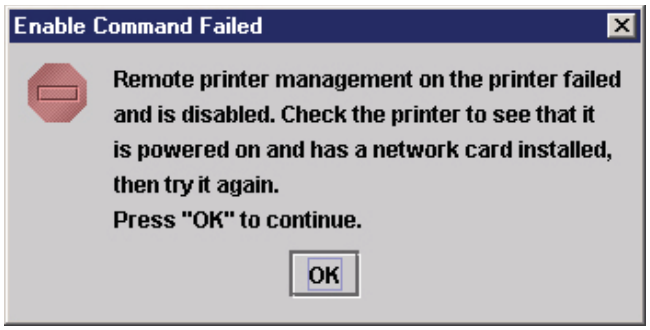



**Figure 49 Enable Command Failed**

PNE also uses Telnet to enable remote printer management (see Enable Remote Printer Management on page 132).

If PNE reports an error when attempting to enable remote printer management (see Figure 49), enter the password for the user **root** (page 58).

See your system administrator.

### Connections Tab

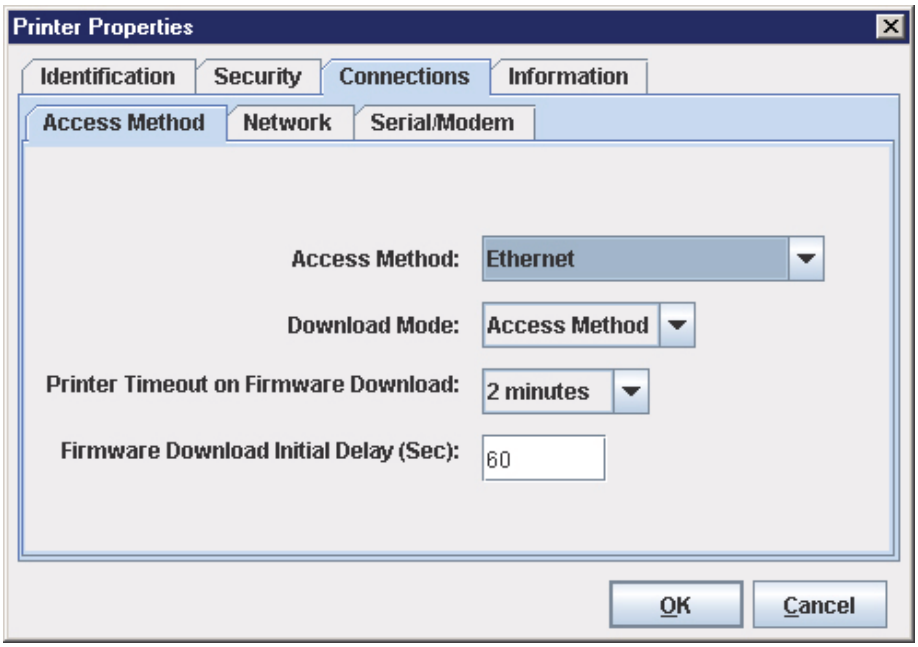



**Figure 50 Printer Properties: Connections Tab – Access Method Sub-Tab**

The Connections tab contains three sub-tabs: Access Method, Network, and Serial/Modem.

### Access Method Sub-Tab

**Access Method:** Identifies how PNE accesses the printer. Refer to the *Network Interface Card User's Manual* to set up the NIC for your printer.

- **Ethernet:** To connect the host computer to the printer via the NIC.
- **Network (TCP):** To connect the host computer to the printer via a network interface.
- **Printer Serial Port (Direct):** To connect the host computer to the printer directly via the serial port.
- **Printer Debug Port (Direct):** To connect the host computer to the printer directly via the debug port.
- **Printer Serial Port (Modem):** To connect the host computer to the printer via a modem and the serial port.
- **Printer Debug Port (Modem):** To connect the host computer to the printer via a modem and the debug port.

**Download Mode:** Identifies how PNE downloads files and configurations to the printer. Access Method is the only option available.

**Printer Timeout on Firmware Download:** Specifies the number of minutes the printer waits for data while downloading a file from the host computer. If a stall lasts for more than the specified time, the printer times out and the download terminates. If you have a slow connection between PNE and the printer, you may need to define a longer Download Timeout period.

The Download Timeout range is between 1 and 60 minutes. The default is 2 minutes.

**Firmware Download Initial Delay (Sec):** Specifies the number of seconds PNE waits before sending files to the printer. If the printer is not ready within the specified time, the download will terminate, and the Status and Error Log will report Connection Refused.

If you receive this error message, increase the initial delay time. The default is 60 (seconds).

### Network Sub-Tab

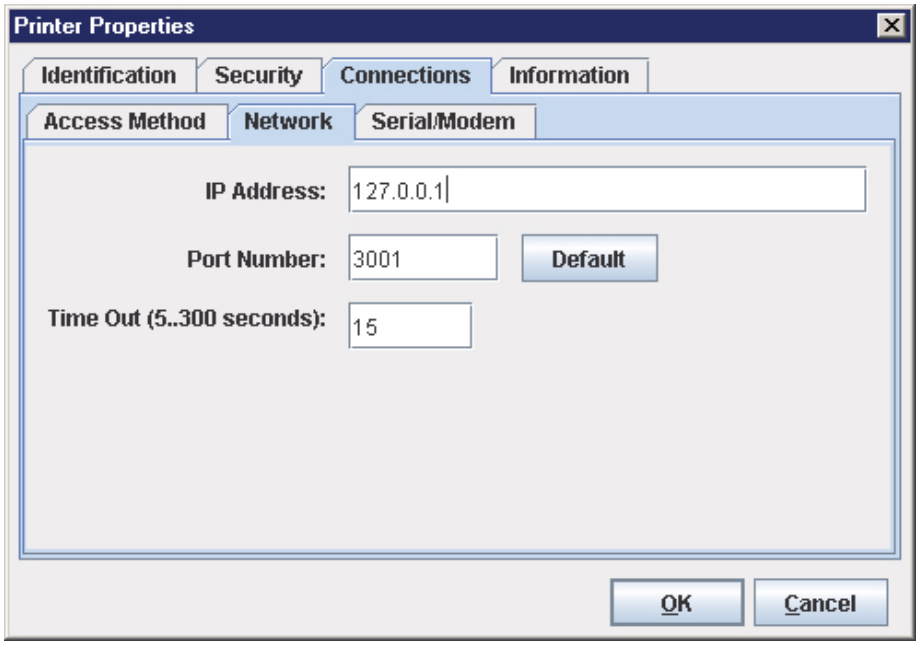



**Figure 51 Printer Properties: Connections – Network Sub-Tab**

Enter the printer's IP Address and Port Number. (Click **Default** to reset the Port Number to 3001.) The Time Out option sets the amount of time, in seconds, PNE waits for a response from the printer after sending a command. If there is no response in the specified amount of time, an error message appears in the Status and Error Log pane. If you have a slow connection between PNE and the printer, you may need to define a longer Time Out period. Define the Time Out between 5 and 300 seconds (the default is 15 seconds).

**NOTE:** The Network settings must match the settings in the operator panel menu. See "ETHERNET PARAMS", "ETHERNET ADDRESS", or "WIRELESS ADDRESS" in the printer's *User's Manual* to check the IP address.

To check the port number on the printer, see Check Port Number on page 15.

### Serial/Modem Sub-Tab

The Serial/Modem tab contains two tabs: Serial Port Parameters and Modem Control.

**NOTE:** P8000 printers do not have PNE serial connectivity.

### Serial Port Parameters

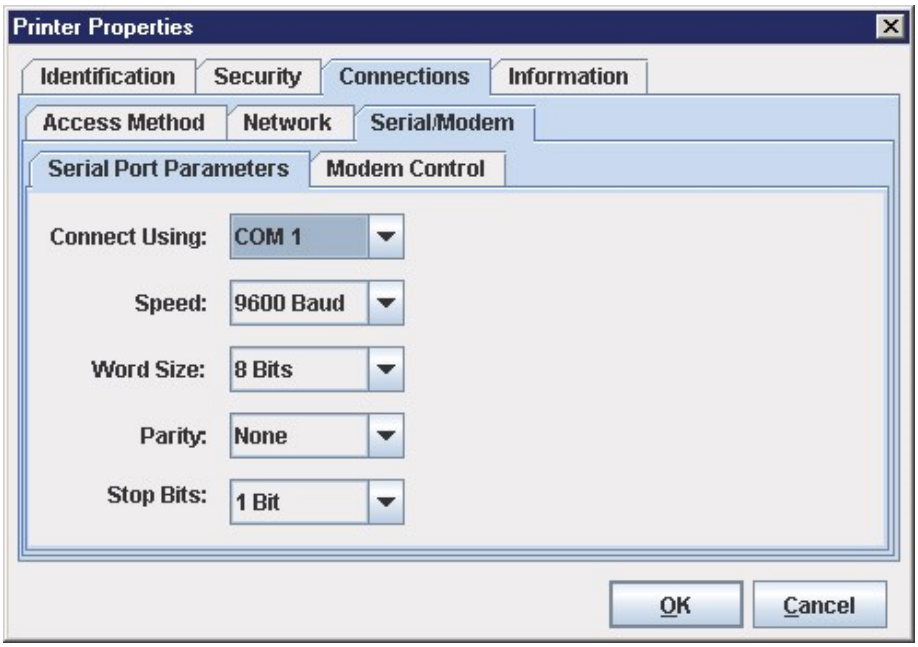



**Figure 52 Printer Properties: Connections – Serial/Modem Sub-Tab Serial Port Parameters**

**Connect Using:** The serial port to use for connection. The default is COM1. The range is COM1 to COM20.

**Speed:** The baud rate at which data transfers. This setting must match the speed of the printer serial debug port. See Table 4 to determine the serial debug port baud rate menu location for your printer model

**Table 4 Serial Debug Port Baud Rate Menu Location**

| Printer Model | Menu |
|---|---|
| SL4M/T4M | INTERFACES Y Printer Mgmt Y Baud Rate |
| SL5000r/T5000r | PRINTER MGMT or Factory Y Baud Rate |
| P7000 | PRINTER MGMT Y BAUD RATE |

**Word Size:** The number of data bits per character. Must be set to 8 bits.

**Parity:** Adds an error checking bit if set to Odd or Even. Since the word size must be set to 8 for correct operation, parity should normally be set to None.

**Stop Bits:** Inter-character gap. Can be set to 1 or 2. The normal setting is 1.

### Modem Control

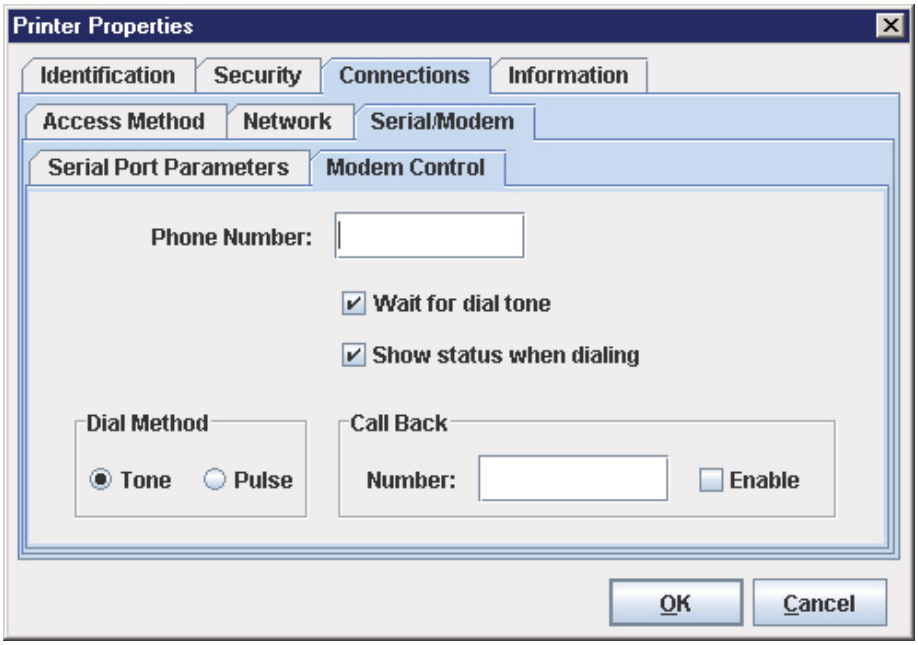



**Figure 53 Printer Properties: Connections – Serial/Modem Sub-Tab Modem Control**

**Phone Number:** Enter the phone number you wish to call.

**Dial Method:** Choose Tone or Pulse.

**Call Back:** Enter your phone number, and check Enable if you want to use it as a call back number.

### Information Tab

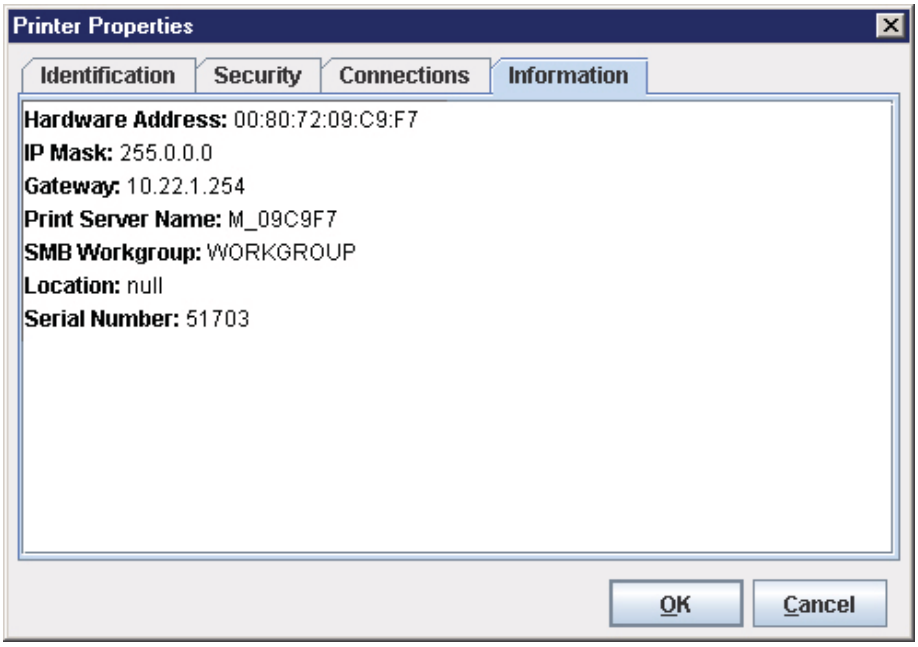



**Figure 54 Printer Properties: Information Tab**

Contains information about your printer. Refer to the *Network Interface Card User's Manual* for more information.

# 3 Applications and Web Access

## Configuration Editor

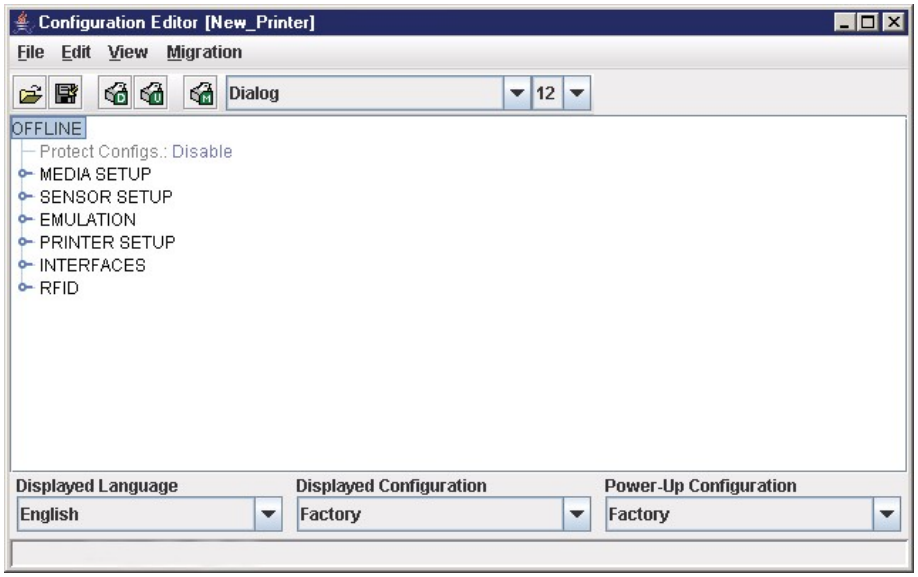



**Figure 55 Configuration Editor Window**

To access the Configuration Editor application, select a printer from the printer database and select **Applications ▶ Configuration Editor** or click the (configuration editor) button. Select **File ▶ Upload From Printer** to upload configurations from the printer. The configurations upload from the printer and the active configuration displays in the Configuration Editor window. See Figure 55.

The Configuration Editor supports offline editing, allowing the editing of stored configurations. If you start the Configuration Editor without connecting to a printer, the screen will be blank (indicating no configuration loaded). A configuration will not display until you load a configuration file from a disk or computer.

The Configuration Editor allows you to upload, modify, and download eight user-defined configurations and the factory default configuration (only if modification of the factory configuration has been enabled; see the NOTE on page 66). You may also save sets of configurations to your local hard drive so that they can be easily downloaded to the printer at any time.

The Configuration Editor does not change the current configuration or the active printer status until the configurations are downloaded to the printer.

## Menu Tree

The Configuration Editor displays the printer configurations in a tree format (see Figure 55). The top level of the tree is the OFFLINE menu. From this level, the tree branches into the printer's submenus. Menu items that have a or (handle) next to them have further submenus below them. Click the handle to expand or collapse the submenus below. (You may also use the Expand Tree/Collapse Tree options in the View menu, but these options will expand or collapse all submenus.)

The Configuration Editor has three drop-down menus at the bottom. The Displayed Language option allows you to select from five or more different languages to display the configuration information. The Displayed Configuration option lets you choose between the available configurations to display. The Power-Up Configuration allows you to assign which configuration loads whenever the printer turns on.

## Creating Configurations

Along with the factory configuration, your printer allows up to 8 user-defined configurations that can be downloaded to your printer's memory. You may create configurations using the operator panel or by using the Configuration Editor.

To create a configuration using the Configuration Editor:

1. Select **Edit ▶ Copy From:**. A list of configurations appears. Undefined configurations appear gray. Choose one of the configurations.
2. Click **Edit**. (Notice that the configuration you chose in step 1 now appears next to the Copy From: menu item.) Move your mouse down to **Copy To**. A list of configurations appears. Choose the number of the configuration you want to create. This new configuration is created with the settings from the configuration you chose in step 1.

**NOTE:** If you choose to **Copy To** a configuration which already exists, that configuration will be overwritten.

3. You may now edit the configuration settings. See Changing Configurations on page 66.

## Changing Configurations

Configuration settings in the Configuration Editor can be changed two ways:

- make the changes directly on the menu tree
- use the Menu Editor

**NOTE:** Normally, the factory default configuration cannot be changed.However, you can enable modification of the factory configuration. Select **Edit ▶ Enable Factory Edit**. It is strongly recommended that you do *not* modify the factory default configuration. If you choose to modify the factory configuration, you should first upload it from the printer, and then save it. This way, you will have a backup copy of the factory configuration. To disable modification of the factory configuration, select **Edit ▶ Disable Factory Edit**.

### Making Changes on Menu Tree

1. Using the Displayed Configuration menu at the bottom of the window, click the drop-down arrow to choose the configuration to change.
2. Expand the submenus until the configuration setting you want to change displays.
3. Select the menu item you want to change. A selection box surrounds your choice. See Figure 56.

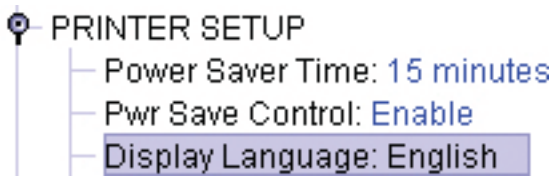



**Figure 56 Selecting a Menu Item**

4. Double-click an item to open the Menu Editor (page 67) for that item, or use the **<** and **>** keys to toggle through the available options. See Figure 57. (You may change these keys in the printer database window: select **File ▶ Preferences**, then click the **Configuration Editor** tab. See page 28).

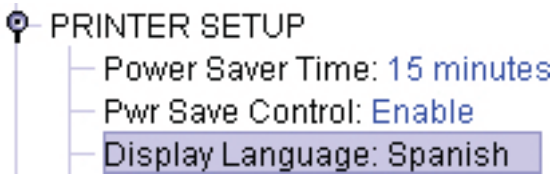



**Figure 57 Toggling Throught The Available Options**

**Menu Editor**

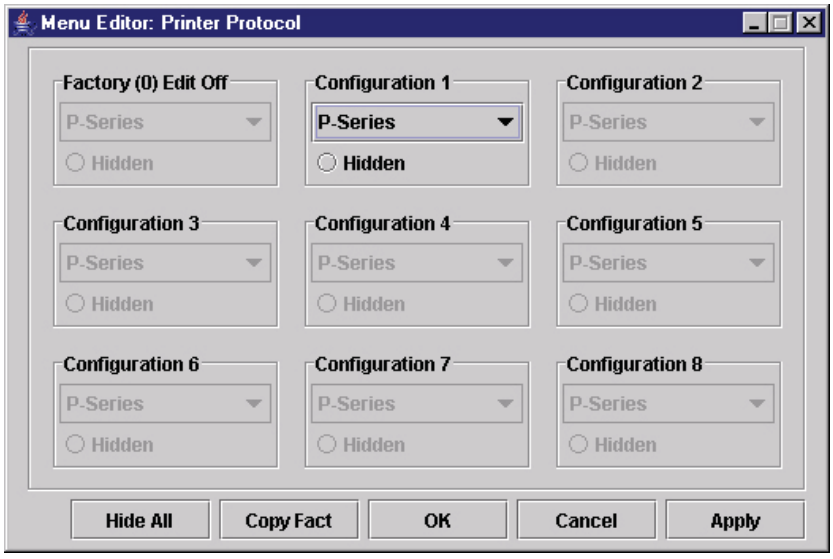



**Figure 58 Menu Editor**

Double-click any menu item to open the Menu Editor window. Figure 58 shows the screen you see when you double-click the Printer Protocol option. By using the Menu Editor, you may view and adjust the settings of all nine of the printer configurations at once. To change a setting, click the drop-down arrow underneath the corresponding configuration and choose an option.

Grayed out configuration names and settings do not exist; you must create the configuration before you can edit it (see page 66).

To hide a menu item in the operator panel, select Hidden under a configuration. Click **Hide All** to hide this menu item in all configurations. (For more information on hiding, see page 68.)

Select **Copy Fact (1-8)** to set all configurations to the same value as the factory or user-defined configuration currently selected under the Edit ▶ Copy From: menu in the Configuration Editor (see page 66).

Click **Cancel** to exit the Menu Editor without saving your changes.

Click **Apply** to save your changes without exiting the Menu Editor.

Click **OK** to save your changes and exit the Menu Editor.

### Deleting Configurations

To delete any of the configurations (except the factory configuration), select **Edit ▶ Delete ▶** and choose the number of the configuration to be deleted.

### Naming Configurations

You may name any of the eight user-defined configurations using an alphanumeric string of 1 to 15 characters. Select **Edit ▶ Names** to open the Edit Configuration Names window.

Choose the configuration you want to name, then click **OK** to assign the name change, **Cancel** to exit this window without saving your changes, or **Reset** to restore the original configuration numbers.

## Hiding/Unhiding Menu Items

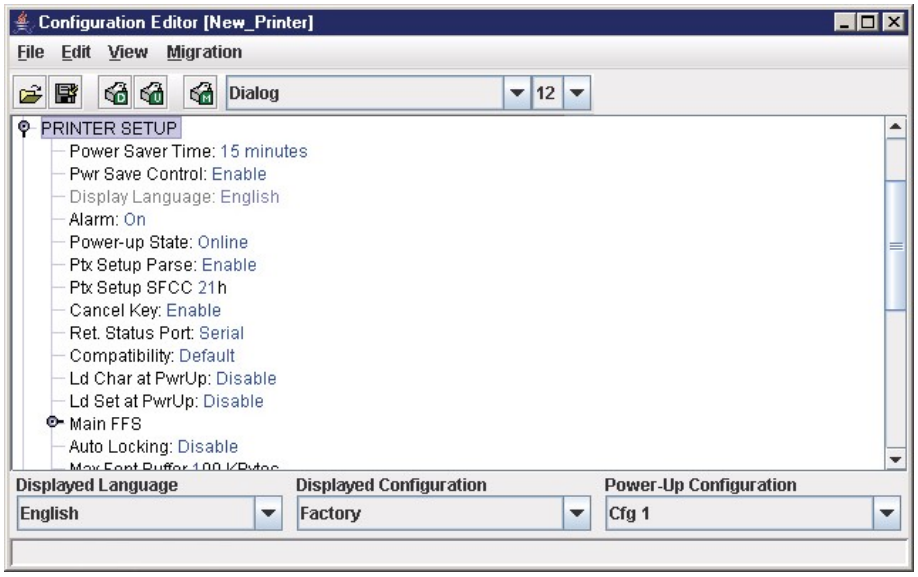



**Figure 59 Hiding a Menu Item**

The Configuration Editor allows you to hide menus to make the operator panel menus easier to use, or to restrict printer operators from accessing certain printer configuration menu items. If you choose to hide a menu item in the Configuration Editor, the hidden menu item still loads into the printer when the configuration downloads to it. However, the hidden menu item does not appear on the operator panel.

The Configuration Editor displays hidden menus in gray on the menu tree. When a menu item is hidden, all of its sub-menus are hidden as well.

In Figure 59, the Display Language menu item is hidden. The Display Language menu item cannot be changed from the operator panel.

**IMPORTANT** **Depending upon the active emulation, active interface, or hardware attached to the printer, some menu itmes connot be hidden on the operator panel, even though they may be defined as "hidden" in PNE.**

You can still change hidden menu items using the Menu Editor.

You can hide or unhide menu items in three ways:

1. In the menu bar, select **View ▶ Hide/Unhide Menus**. With this menu option, you may hide or unhide individual items, sub-menus or the entire configuration.
2. Using the Menu Editor. See page 67.
3. Using the keyboard. From the menu tree, select a menu item. A selection box appears around the selected menu item. Press **H** to hide the menu item or **U** to unhide the menu item. (To change these keys, select **File ▶ Preferences** in the printer database window. See page 27.)

## Saving Configuration Files

Normally, your printer can save only nine configurations in its memory. You change these configurations through the operator panel. However, using PNE, you can store a nearly unlimited number of configurations on your host computer.

Once you have made your changes, you can save your configurations as a **.cfg** file on your local hard drive. This way, you can open any set of configurations from your host computer and download them into your printer quickly and easily.

To save configurations to your local hard drive, select **File ▶ Save As**. Be sure to save your configuration as a **.cfg** file.

It may be necessary to save a configuration file in the format used by previous versions of PNE. In this case, select "Legacy Configuration File" from the Files of Type: list and select the file to be saved.

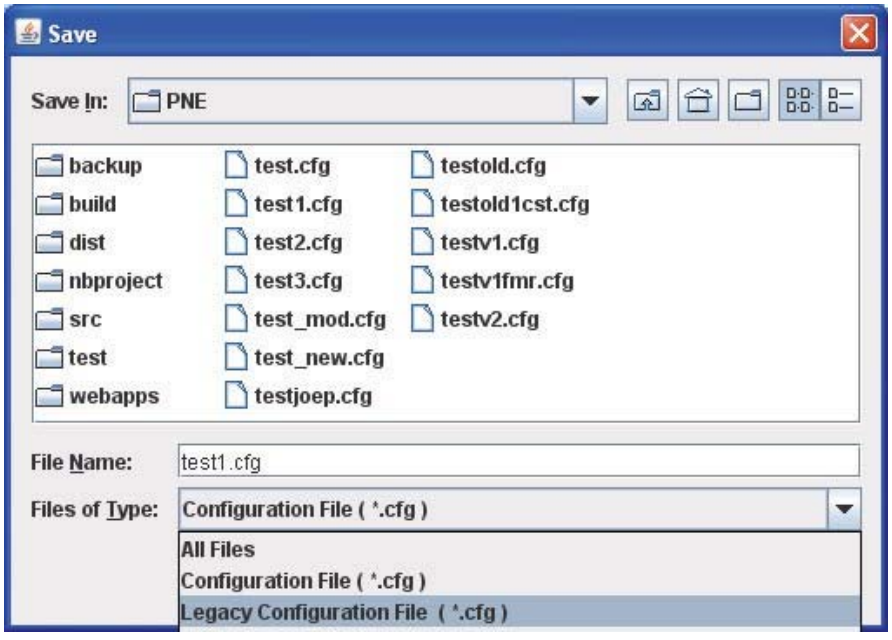



**Figure 60 Saving as a Legacy Configuration File**

## Opening Configuration Files

To open a configuration file, select **File ▶ Open**. The Configuration Editor loads the settings from the file you choose.

**IMPORTANT** **These settings do not affect the current configuration or the active printer status until the configurations are downloaded to the printer.**

**NOTE:** The Configuration Editor displays only one configuration file at a time. Be sure to save any changes before opening another configuration file.

If you load a configuration file that was created with PNE version 3.03H or earlier, you may need to link the affiliated CST file. In this case, select **File ▶ Open** again, and check the **Link CST File** check box. See Figure 61. Navigate to the affiliated **.cst** file and double-click it (or single-click it and click the **Select** button). Save the configuration file, and the CST information will save to the new configuration file. (You will not need to link the CST file in the future.)

**NOTE:** If you hover the pointer over the **Link CST File** check box, a screen tip appears that describes this functionality.

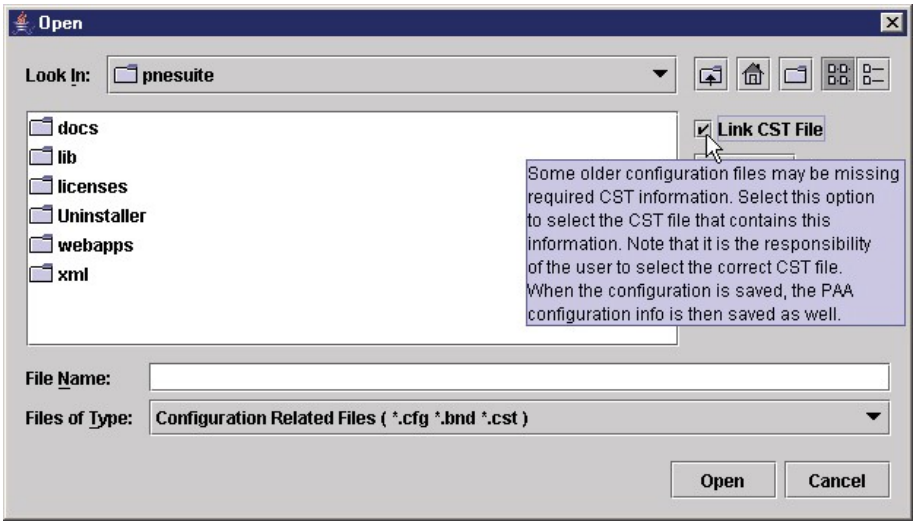



**Figure 61 Linking a CST File**

## Downloading Configurations

You may use the Configuration Editor to download into your printer any configurations you have created. Open the configuration file you want to use, then select **File ▶ Download To Printer** to send individual configurations, all configurations, or just the configuration names.

Downloading a configuration overwrites the corresponding configuration currently stored in the printer. If you want to save the configurations currently stored in the printer before overwriting them, upload them into the Configuration Editor first, and then save them as a **.cfg** file on your local hard drive.

**NOTE:** Be sure to calibrate your thermal printer after you download a configuration to it. See “Running Auto Calibrate” in the printer’s *User’s Manual*.

**NOTE:** Downloading a configuration file does not immediately update the printer’s active configuration. You must activate a downloaded configuration using the Load Config. setting in the operator panel. Refer to the printer’s *User’s Manual* for details.

## Uploading Configurations

The Configuration Editor can upload configurations from a printer. Select **File ▶ Upload From Printer**. Once the configurations upload, you can save them to a file. Now you can select another printer from the database and upload its configurations. PNE prompts you to save the previously uploaded configuration before the new configuration uploads.

## Migration

Over time, menus and functions changed to reflect the new features of the printers. Some printer features have been removed to provide better or more complete printer features. Older saved configurations may have used these removed features or contain settings that no longer exist or have been modified in new printer firmware. This can cause potential problems when downloading new printer firmware while preserving previously saved configurations if the saved settings are not analyzed and adjusted to work with the new firmware. This analysis and adjustment has been summarized into one word: migration.

### Transferring Saved Settings

#### Original Method

To ensure that your settings from the saved configuration are set correctly in the printer: print out the old configurations, download the configurations to the printer, print out the new configurations, and compare the old settings with the new settings.

If you need to make changes: upload the configurations to the Configuration Editor, make changes, and re-download to the printer.

#### Enhanced Method

Using the migration utility in the Configuration Editor, all these things can be done without having to download the configurations to the printer until you know they are correct. No migrated settings will be downloaded to your printer until you download them. This way you can run the migration, view the results, view the report, and make any necessary changes without affecting your saved configurations or the configurations in the printer.

#### How To Use The Migration Utility

**STEP 1:**

**Load the configurations settings that need to be migrated into the Configuration Editor before using the migration utility.**

#### Migration Limitations

Only attempt to migrate saved configuration settings from printers of the same model type and the same emulations. An example of a different printer model type is a thermal printer configuration to a line matrix printer.

The printer that you are going to migrate the settings to should be a superset of or contain the same emulations as the saved configurations. For example, migrate saved settings that contain an ANSI emulation on a line matrix printer to another line matrix printer that contains ANSI and PGL. Do not migrate these same saved settings to a line matrix printer that does not contain ANSI. The migration utility does not prevent you from doing this, but the results would be useless and could cause problems if the migrated configurations were downloaded and then loaded on a different printer type.

**IMPORTANT** **Make sure the printer model type and emulations of the saved configurations match the printer model type and emulations of the printer you want to migrate the settings to before attempting to migrate the saved settings**.

### Loading Configuration Settings

The configuration settings to migrate can be opened using the Configuration Editor in the following ways:

#### Loading From a File

Click the (open configuration file) button or select **File ▶ Open**. Choose your configuration file and then click **OK**.

#### Loading From a Printer

Select a printer in the printer database. Click the (upload configuration) button or select the **File ▶ Upload From Printer** to upload the settings.

### STEP 2:

**Select a printer and begin the migration of the saved configuration settings.**

#### Select a Printer to Use for Migration

Select a printer in the printer database. The printer you select must have new printer firmware. If it does not, exit the Configuration Editor and download new firmware to the selected printer (see File Download on page 80), then select the printer in the printer database.

#### Start the Migration

Click the (migrate) button or select **Migration ▶ Run Migration**. Several messages will appear in the bottom left corner of the Configuration Editor that indicate the progress of the migration.

### STEP 3:

#### View the results using the Configuration Editor.

The results will display graphically in the Configuration Editor.

Several different icons will display depending on the migration. Hover the pointer over an icon to display a short description. A icon can represent several types of changes. The migration report details these changes (page 73).

Select **Migration ▶ View Results** to see the migration results.

This menu has the following submenus:

#### Original Configurations

**All Menus:** Displays the original configuration settings with the menus that were removed from the original configurations.

**Removed Menus:** Displays only the menus that were removed from the original configurations.

#### Migrated Configurations

**All Menus:** Displays the migrated configuration settings including all of the menus that were modified.

**Modified Menus:** Displays only the menus that were modified by the migration of the saved settings.

If you select **Modified Menus** and then select **View ▶ Expand Tree**, all of the menus that were affected by the migration will display in a simplified view.

#### Migration Icon Definitions

- Indicates a new menu or a new set of menus.
- Indicates that the menu previously existed in the saved configurations and was added to another menu.

Indicates that the menu previously existed in the saved configurations and was moved to another menu, or removed from the current menu but still exists in the saved configurations.

Indicates that the menu was completely removed.

Indicates that this menu or a submenu has changed. The change can be various things such as range or increment.

Indicates that additional selections have been added to this menu.

Indicates that selections have been removed from this menu.

Indicates that this menu has been replaced with another menu or the menu definition has changed.

**STEP 4:**

**View the results using the Migration Report Viewer.**

Select **Migration ▶ View Report** or double-click the **Migration Report** icon (located at the top of the migrated configurations display) to open the Migration Report Viewer.

The Migration Report Viewer displays a detailed textual report of the information that displays graphically in the Configuration Editor. Use the Migration Report Viewer to view, save, or print the report.

**NOTE:** It is recommended to use landscape mode when printing the migration report.

The report contains the following types of messages:

**Informational Messages:** Menu settings that migrated without problems. They display to inform you that there was a change during the migration.

**Warning Messages:** Menu settings that attempted to migrate to the new configurations and were changed. Analyze these settings to determine if they are desirable.

**Intervention Messages:** Menu settings that could not migrate to the new configurations. This could occur when a menu item was completely removed and the user utilized a setting other than the default. In this case the Migration Utility cannot decide what action to take.

**IMPORTANT** **You must resolve intervention messages, or the printer may not operate properly.**

**STEP 5:**

**Post-migration.**

After you review the migrated configuration, save, delete, or download the migrated configuration file to one or more printers using PNE.

# Factory Settings Differences

The Factory Settings Differences application allows you to keep track of migration from old to new printers. It displays the differences between the Factory configuration settings and all other saved configuration settings. The differences are highlighted to show value differences between configurations.

Two views displaying the data are available. The All Settings view shows all of the menus, highlighting the value differences. The Differences Only view shows the menus and its corresponding values that differ from the Factory settings.

To access the Factory Settings Differences application, select **Applications ▶ Factory Differences** or click the (find differences) button. The application opens with no configuration data loaded. The Factory Settings Differences window contains three sections: the menu bar, toolbar, and the configuration settings differences pane. See Figure 62.

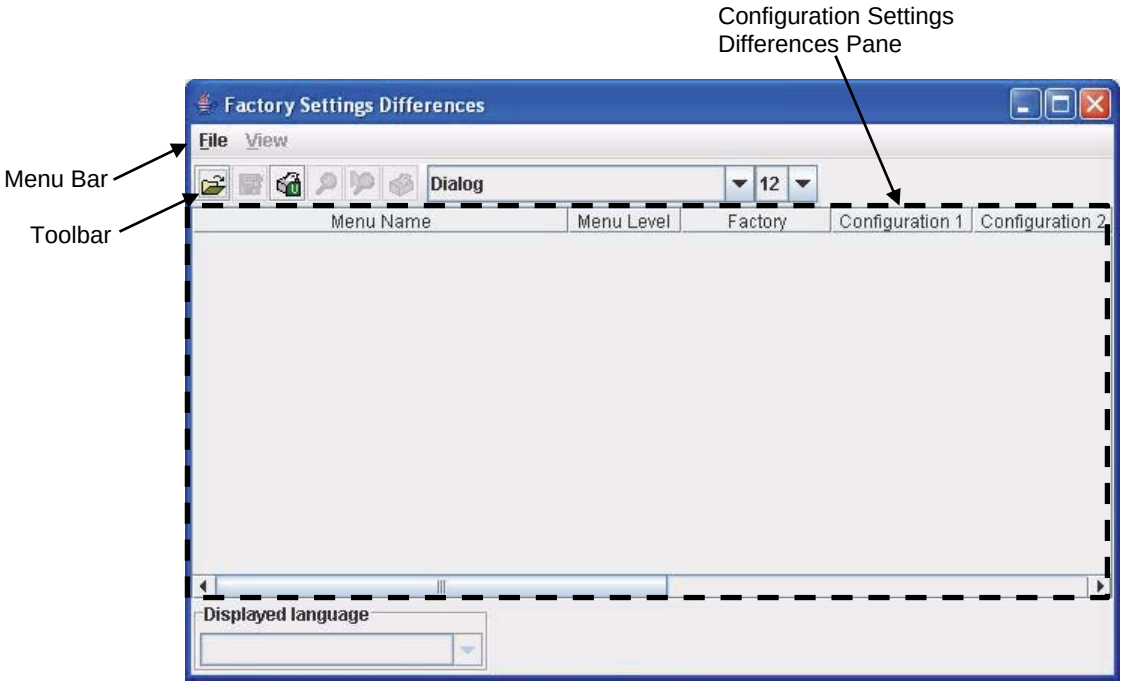



**Figure 62 Factory Setting Differences Window**

## Menu Bar

The menu bar consists of a File menu and a View menu.

### File Menu

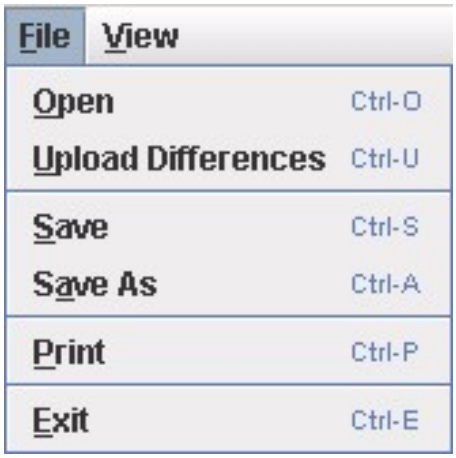



**Figure 63 Factory Settings Differences - File Menu**

### Open

The Open submenu allows you to select and open a previously saved Factory Settings Differences file. The file must be one that was created with this application.

**NOTE:** No error checking is available for an invalid file type, including Comma Separated Variable (CSV) formatted files that were not created by this application.

### Upload Differences

The Upload Differences submenu uploads the configurations and determines the Factory settings differences. The results display in a table in the All Settings view.

### Save and Save As

The Save and Save As submenu allows you to select and save the Factory setting differences file to a file. The results table can only be saved in the Differences Only view. You will be informed if you try saving the file in the All Settings view. The saved file will be in CSV format.

### Print

The Print submenu allows you to set up printing preferences and print the differences table. You can print the differences table in both views.

### View Menu

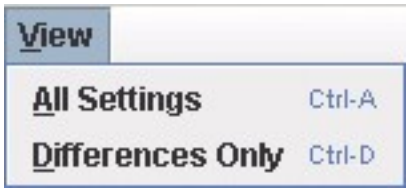



**Figure 64 Factory Settings Differences - View Menu**

### All Settings View

The All Settings view displays all of the menus in the configuration, highlighting the menus that are different from the Factory settings and their values. The menu name and its associated values are highlighted in different colors for easy distinction. See page 75.

### Differences Only View

The Differences Only view shows the top level menus and the menus that have configuration values that are different than the Factory settings. Since this view only shows the differences, the menu names are not highlighted. The menu values are highlighted for easier distinction. See page 75.

## Toolbar

**Figure 65 Factory Settings Differences - Toolbar**

The toolbar contains buttons for Open, Save, Upload Differences, All Settings View, Differences Only View and Print. These buttons perform the same actions as their menu counterparts. The toolbar also has font selection and size boxes to allow user selectable preferences.

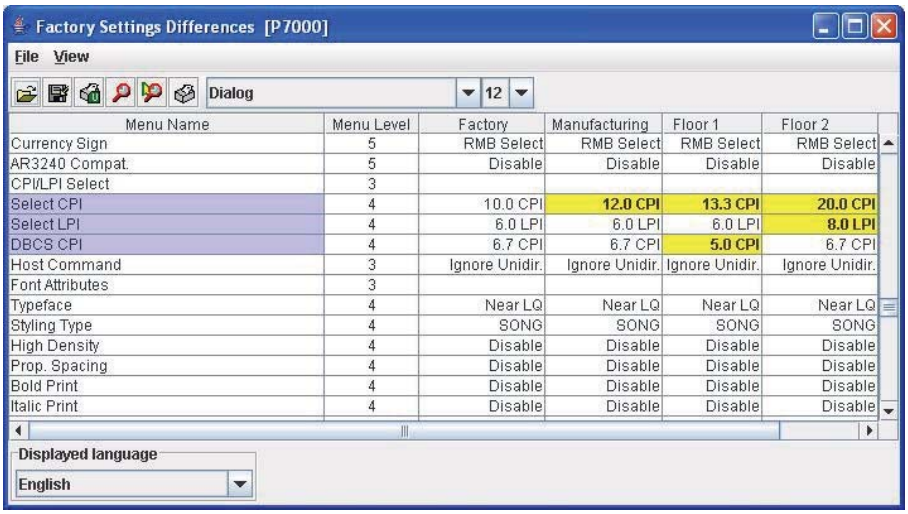
## Configuration Settings Differences Views

This view consists of a non-editable table that displays the menu name, the menu level, the Factory default settings, and the values of other saved configurations.

The menu level column shows a menu option’s hierarchy level from the top menu. Number 1 indicates the top menu, and the largest number is the menu that is the furthest down the menu tree.

### All Settings View

In the All Settings View mode, all menus and its corresponding values display in a table. The menus with values different from the Factory configuration is highlighted in purple and the value itself is highlighted in yellow. See Figure 66.

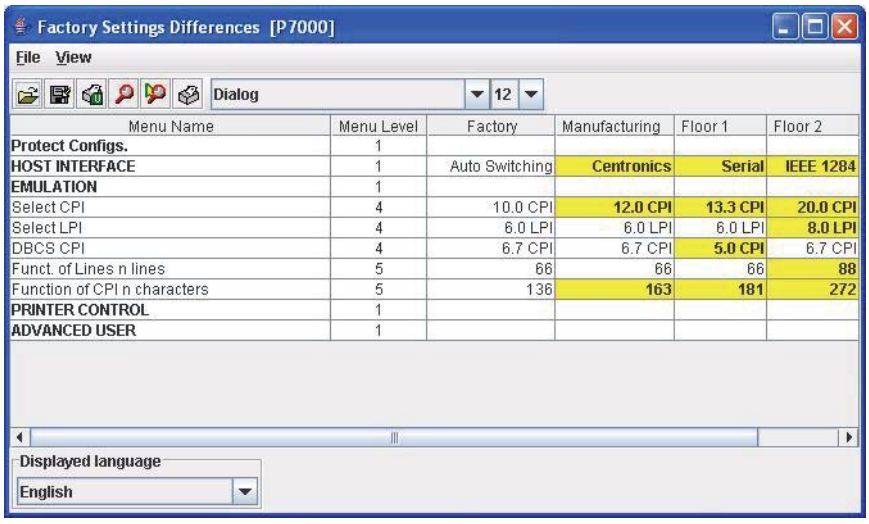



| Menu Name | Menu Level | Factory | Manufacturing | Floor 1 | Floor 2 |
|---|---|---|---|---|---|
| Currency Sign | 5 | RMB Select | RMB Select | RMB Select | RMB Select |
| AR3240 Compat. | 5 | Disable | Disable | Disable | Disable |
| CPI/LPI Select | 3 | | | | |
| Select CPI | 4 | 10.0 CPI | **12.0 CPI** | **13.3 CPI** | **20.0 CPI** |
| Select LPI | 4 | 6.0 LPI | 6.0 LPI | 6.0 LPI | **8.0 LPI** |
| DBCS CPI | 4 | 6.7 CPI | 6.7 CPI | **5.0 CPI** | 6.7 CPI |
| Host Command | 3 | Ignore Unidir. | Ignore Unidir. | Ignore Unidir. | Ignore Unidir. |
| Font Attributes | 3 | | | | |
| Typeface | 4 | Near LQ | Near LQ | Near LQ | Near LQ |
| Styling Type | 4 | SONG | SONG | SONG | SONG |
| High Density | 4 | Disable | Disable | Disable | Disable |
| Prop. Spacing | 4 | Disable | Disable | Disable | Disable |
| Bold Print | 4 | Disable | Disable | Disable | Disable |
| Italic Print | 4 | Disable | Disable | Disable | Disable |

**Figure 66 All Settings View**

### Differences Only View

In the Differences Only View mode, only the differences between the Factory configuration and other menu configurations are listed. The differing values are highlighted in yellow. The menus are not highlighted.




| Menu Name | Menu Level | Factory | Manufacturing | Floor 1 | Floor 2 |
|---|---|---|---|---|---|
| **Protect Configs.** | 1 | | | | |
| **HOST INTERFACE** | 1 | Auto Switching | **Centronics** | **Serial** | **IEEE 1284** |
| **EMULATION** | 1 | | | | |
| Select CPI | 4 | 10.0 CPI | **12.0 CPI** | **13.3 CPI** | **20.0 CPI** |
| Select LPI | 4 | 6.0 LPI | 6.0 LPI | 6.0 LPI | **8.0 LPI** |
| DBCS CPI | 4 | 6.7 CPI | 6.7 CPI | **5.0 CPI** | 6.7 CPI |
| Funct. of Lines n lines | 5 | 66 | 66 | 66 | **88** |
| Function of CPI n characters | 5 | 136 | **163** | **181** | **272** |
| **PRINTER CONTROL** | 1 | | | | |
| **ADVANCED USER** | 1 | | | | |

**Figure 67 Differences Only view**

### Displayed Language

The Displayed Language drop-down menu shows all available foreign languages that the attached printer supports. Since this depends on the printer, the drop-down menu will be disabled when the Factory Settings Differences application is first launched. After the Upload Differences program is executed, the available language names supported by the printer will display.

After you select a language, the program determines if it has already been uploaded, and changes the table settings to this language. If it is not loaded, the program uploads the selected language and redisplays the table settings in the new language.

# Flash File Manager

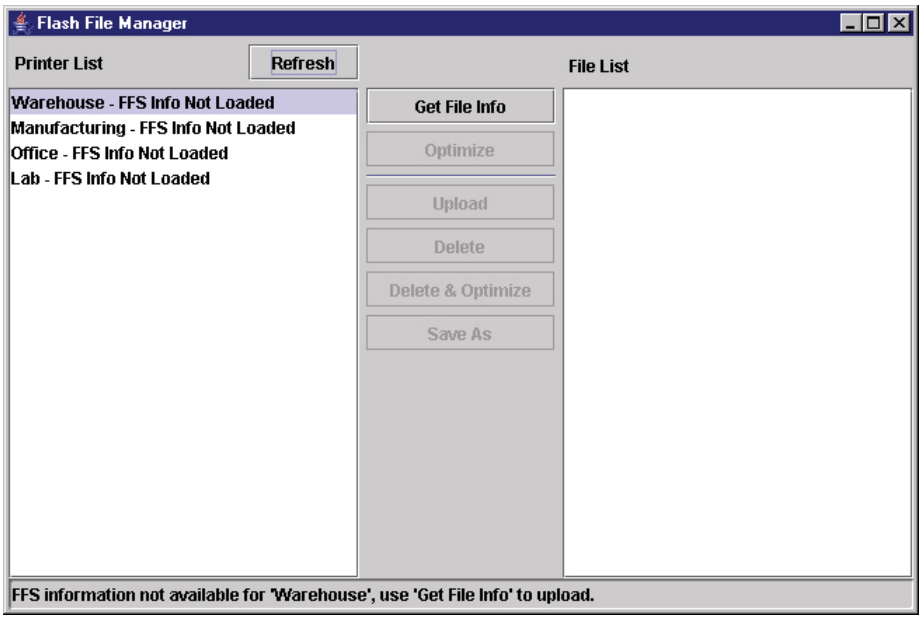



**Figure 68 Flash File Manager Window**

With the Flash File Manager, you can view a list of the unprotected files loaded in the printer's flash memory and optional EM (External Memory).

**NOTE:** The EM is available only for SL4M/T4M and P8000 printers.

You can upload the files to the host computer, save them for backup, delete them, and download them to another printer.

Select **Applications ▶ Flash File Manager** or click the (flash file manager) button. See Figure 68.

The Printer List pane displays a list of printers that are selected in the printer database. If you select one printer, it appears alone in the list. If you select a folder, all active printers in the folder appear.

If you return to the printer database and select another printer or folder, click **Refresh** to update the Flash File Manager and display the newly selected printer(s).

**NOTE:** Cloned printers or different folders that link to the same printer do not display. Only the original printer displays.

## Get File Info

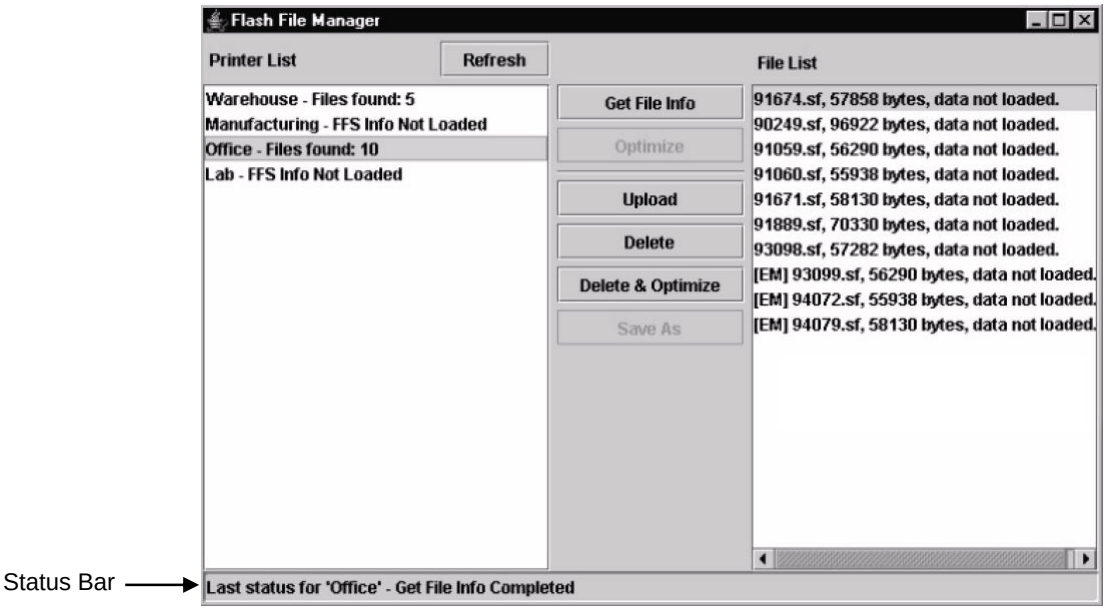



**Figure 69 Get File Info**

Select a printer, and then click **Get File Info** to see a list of the unprotected files loaded in the printer's flash memory. Progress displays in the status bar at the bottom of the window. After you retrieve the flash memory information, the files appear in the File List pane. See Figure 69.

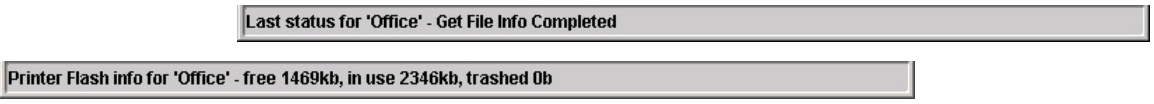
**NOTE:** The files are located on the printer's internal flash memory. If [EM] precedes the file name, then the file is located on the optional EM.

When complete, select another printer and click **Get File Info** to view its flash memory information.

You can only view the flash memory information from one printer at a time, but the Flash File Manager remembers what information has been retrieved. For printers that have not had flash memory information loaded, the message FFS (Flash File System) Info Not Loaded displays in the Printer List. See Figure 69.

**NOTE:** Although you have retrieved the flash memory information, the files have not been uploaded. Notice the message "data not loaded" in the File List. To upload the files, see Upload on page 79.

The status bar will toggle from the status of the last operation performed to the status of the printer flash: memory available (free), memory used (in use), and memory deleted but not optimized (trashed):




If you have an EM installed, the status bar will also toggle the status of the EM:

## Upload

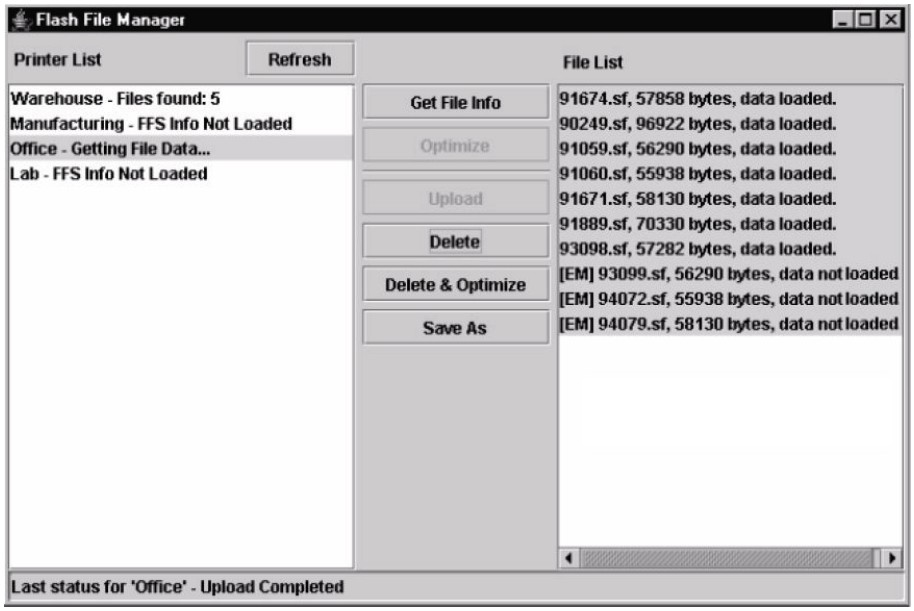



**Figure 70 Uploaded Flash Files**

To upload unprotected files, select a printer, and then select the files you want to upload from the File List. Click **Upload** to upload the unprotected files from the flash memory. Progress displays on the status bar at the bottom of the window.

After the files upload, they appear selected in the File List pane. See Figure 70. Click **Save As** to save all the files together as one downloadable file (bundle file). Save the file with a **.pff** file extension.

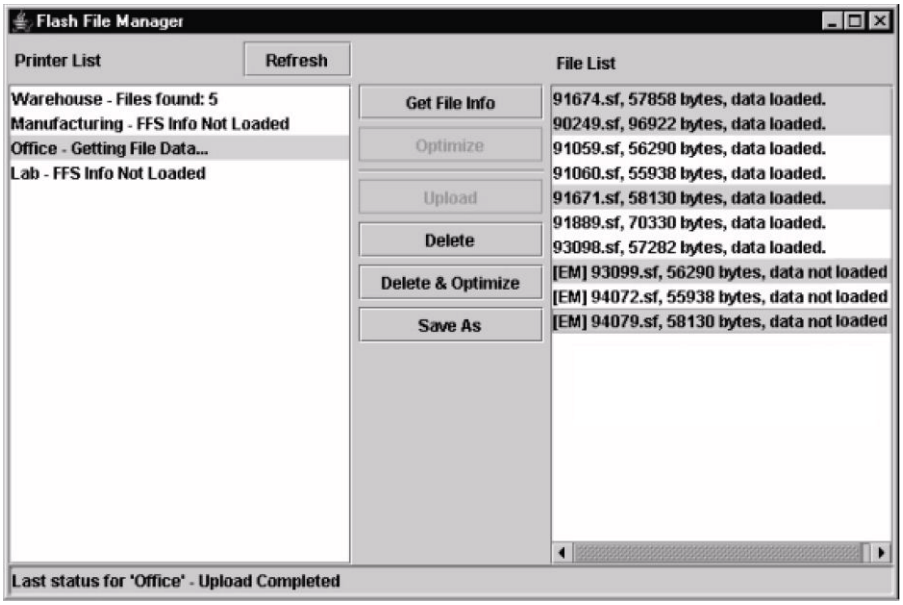



**Figure 71 Selecting Multiple Files**

Or, you may use the **Shift** or **Ctrl** key to select single or multiple files. See Figure 71. This way, only the selected files will save to the **.pff** file when you click **Save As**.

**NOTE:** You can save only uploaded files to a downloadable file.

### Delete And Optimize

**IMPORTANT** **You can not undo a flash file deletion.**

You can erase files from the printer's flash memory. Select the files you want to delete from the File List, then click **Delete**. To download files back to the flash memory, see File Download on page 80.

Once you have deleted files, the flash memory is not optimized until you click **Optimize**. Optimizing reclaims flash space from deleted flash files.

**NOTE:** The printer reboots after you Optimize.

To delete and optimize in one step, select the files you want to delete from the File List, then click **Delete & Optimize**.

# CST Manager

See Datastream Adapter on page 135.

# File Download

**NOTE:** The terms **download** and **upload** as used here and in the software indicate the printer's point of view. Therefore, when you download a file, you are sending information to the printer (the printer downloads). When you upload a file, you are receiving information from the printer (the printer uploads).

**IMPORTANT** **To utilize the File Download application, make sure Enable Status Monitoring is checked in the Polling tab (see page 46). Then select your printer in the printer database and click the update status button to make sure your printer has been polled at least once (see page 50).**

The File Download application allows you to download any of the following file types (program files, configuration files, recovery files, and flash files) to either a single printer or to a group of printers in one step. Recovery files are an exception and should only be downloaded back to the printer that had problems during a download.

To download a file to a single printer, insert a (D) (Download file) icon below the printer (one level lower than the printer). To download a file to a group of printers, insert the Download file icon on the same level as the printers (in the same folder containing the printers). Use the printer database and insert additional Download file icons to download as many files to as many printers as you want.

**NOTE:** Previous versions of PNE required different file types to be downloaded to the printer in separate steps, which is why the various file types were identified by (C) or (D) icons. With this version of the software, a distinction between the various file types is not needed, and a (D) icon identifies all file types. Therefore, if you open a printer database that was saved using a previous version of the software, all (C) icons will change to (D)

### Define the Download Files

After you insert Download files, you must define them:

1. Double-click (D) **New Download File**. The Define Download File dialog box opens. See Figure 72.

2. Click **Browse**. The Open dialog box opens.

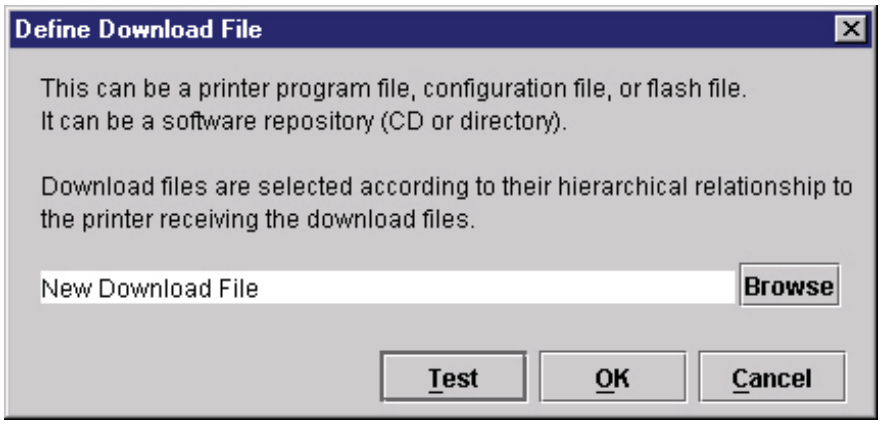



**Figure 72 Define Download File**

3. Navigate to a program (firmware), configuration, recovery file, or flash file, select it, then click **Open**.
4. Since multiple file types can now be downloaded in one operation, a **Test** button is provided to allow you to verify if the file type specified is supported by the printer. Clicking the **Test** button causes PNE to evaluate the specified file and display the file type – this will help you verify that you selected the correct file. Click **OK** if the file type returned is correct, click **Cancel** to terminate, or click **Browse** to select another file.
5. When you are finished, click **OK**. The database displays the path and name of the program, configuration, recovery or flash file.

## Download the Files

After you define Download files in your database, you must download them to your printer for them to affect the active print state.

**NOTE:** Each emulation used by the printer has its own list of valid flash files it can use. Refer to the appropriate *Programmer's Reference Manual* for details about valid flash files.

To begin the download process, select a printer or a folder containing printers and select **Applications ▶ File Download**, or click the (file download) icon. The File Download dialog box opens and displays a list of all the printers that you selected in the printer database. See Figure 73.

**NOTE:** If you later select a different printer or folder in the printer database and the File Download dialog box is still open, click **Update List** to update the list of printers.

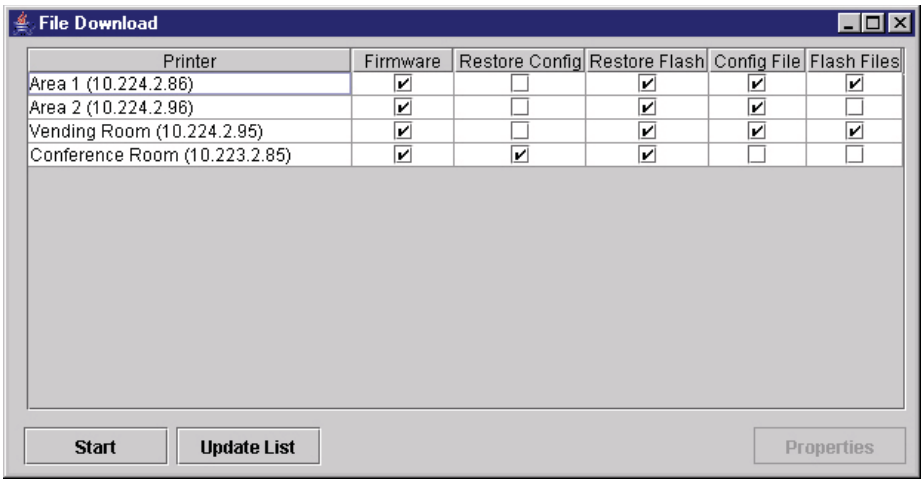



**Figure 73 File Download**

The following are the download options for each printer:

**Firmware:** Check this box to download the printer firmware (program file).

**Restore Config:** Check this box to restore the configurations that were in the printer once the Program File download has been completed.

**Restore Flash:** Check this box to restore the flash files that were in the printer before the Program File was downloaded.

**Config File:** Check this box to download a new configuration file.

**Flash Files:** Check this box to download additional flash files.

For each printer listed, various combinations of these operations can be executed. Some combinations are mutually exclusive. For example, PNE does not allow you to simultaneously preserve the printer's configurations and download a new configuration file to the same printer (you cannot check both Restore Config and Config File for the same printer). Similarly, you cannot restore configurations or flash files unless you are downloading new program files.

**NOTE:** You can double-click a field name (e.g., Firmware, Config File, etc.) to check or uncheck the check boxes for all displayed printers at once.

**Printer's SD card:** Using PNE to download files to the printer SD card may take a while. To avoid printer network connection time outs, change the printer print job timeout setting to indefinite. The printer print job timeout is different from the "Network Time Out" described in Network Sub-Tab on page 32.

To change the printer print job timeout, telnet to the printer and type 'store pserver opts jobtimeout 0' and 'reset'.

### Viewing the File Destination

Select a printer in the File Download dialog box and click **Properties**. The Update Properties dialog box opens. See Figure 74.

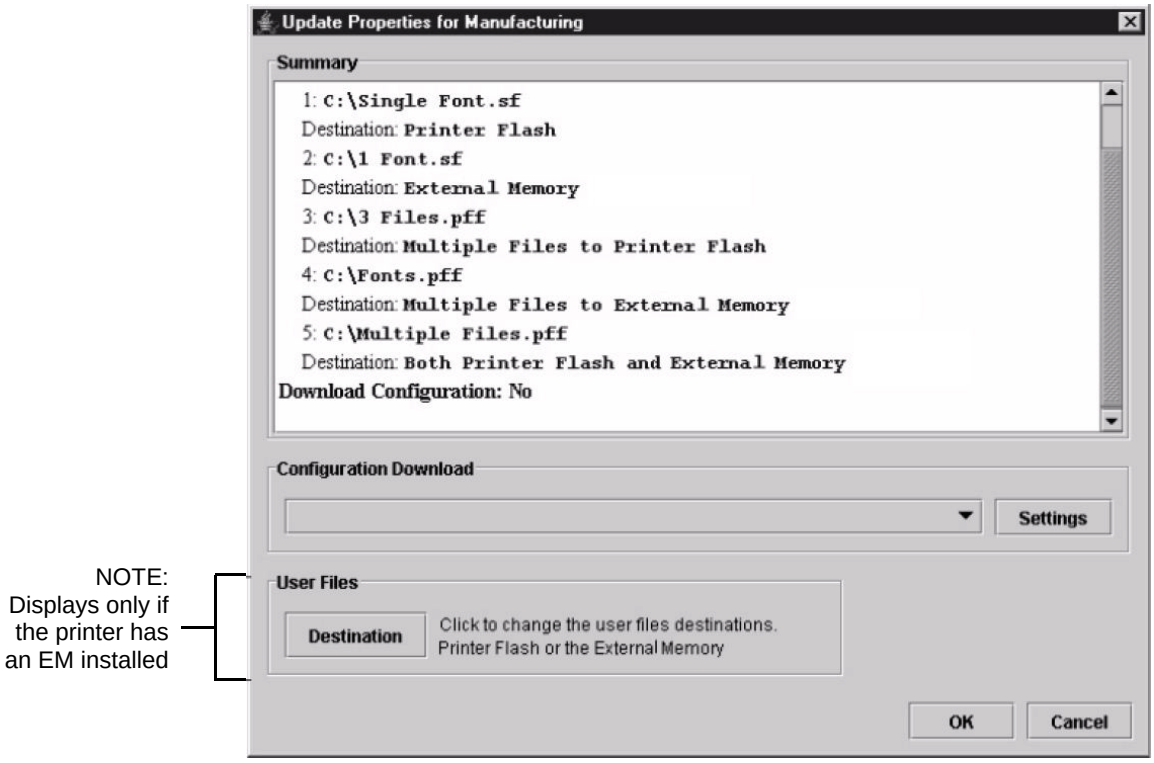



**Figure 74 Update Properties**

The Update Properties dialog box lists all the files that will be downloaded to the selected printer, the source of the files, and their destinations: Printer Flash (a single file to the printer's flash memory) or Multiple Files to Printer Flash. Also, if the printer supports the EM: External Memory (a single file to the EM), Multiple Files to External Memory, or Both Printer Flash and External Memory.

**IMPORTANT** **PNE can only download files to the EM through the NIC.**

### Changing the File Destination

If you have the optional EM and you wish to change the destination of a single file, click **Destination**. The User Files dialog box opens. See Figure 75.

Select **Printer Flash** or **EM** to specify the new destination.

**NOTE:** Bundle files (archives that contain multiple files, usually with a **.pff** extension) cannot have their destinations changed. Files within bundle files will download to the printer's flash memory, the EM, or both, depending on their original location.

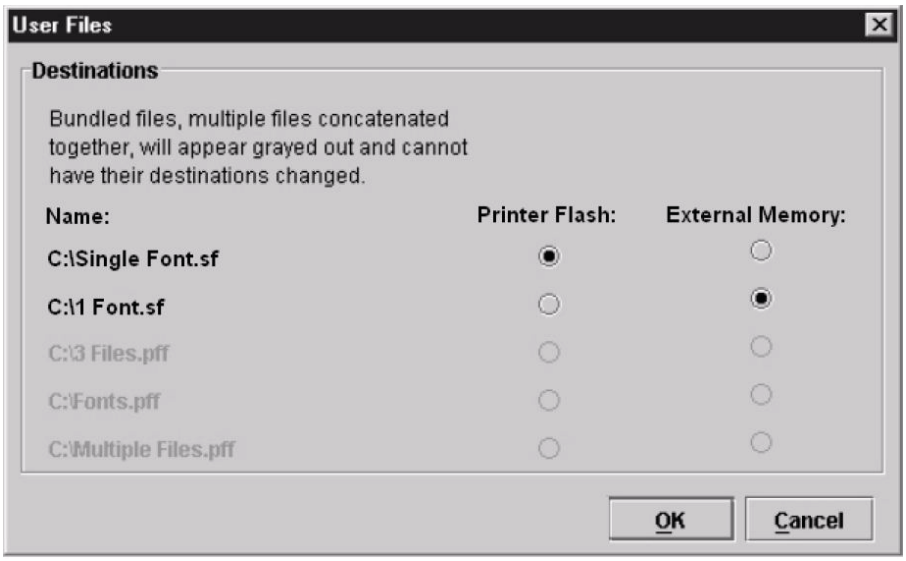



**Figure 75 User Files**

### Restoring Configurations and Flash Files

Whenever a printer downloads a program (firmware) file, the configurations and flash memory are erased. You can choose whether or not to restore the configurations and/or flash memory to what was previously loaded. Check or uncheck the Restore Config check box for configurations and/or the Restore Flash check box for flash files. By default, the configurations and flash memory will restore.

**IMPORTANT** **If you uncheck Restore Config or Restore Flash, the configurations or flash memory will erase when you initiate a program file download.**

**NOTE:** If a download fails due to a power interrupt or a severed connection, the configurations and flash files will be lost and will not restore. You can still restore the printer using the recovery file, but only if Restore Config and/or Restore Flash was checked. See Recovery File on page 89.

If you are downloading a program file and flash files, the Flash Files and Restore Flash check boxes will be checked. The flash files will restore, but they will be overwritten if the new flash files you are downloading have the same name.

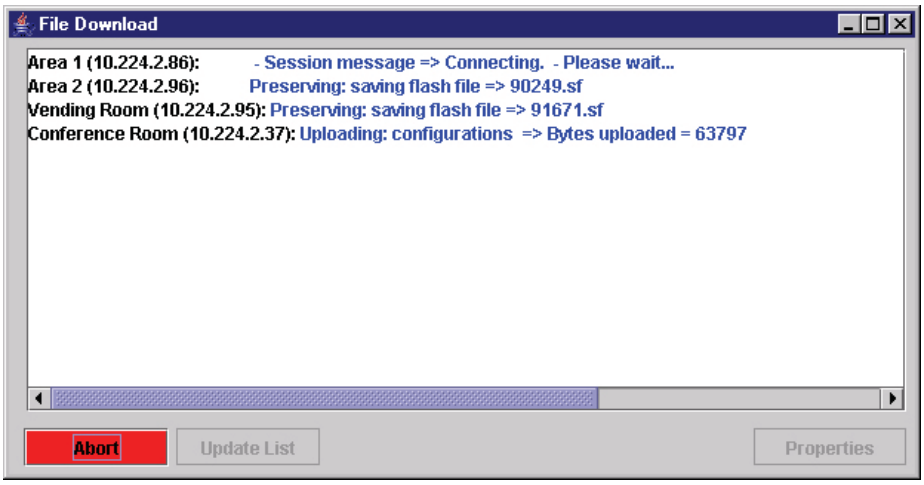



**Figure 76 Download in Progress**

Confirm that the correct files will be sent to the appropriate printers. Close the dialog box to cancel the download and start over.

Click **Start** to begin the download. Once the download is in progress, click **Abort** or close the dialog box to abort the download. See Figure 76.

**IMPORTANT** **Aborting a download may leave the printer in an unstable state.**

Before any operations begin, PNE obtains the printer type from the printer and compares it with the printer type in the firmware file. If the types do not match, PNE aborts the operation and shows an error message in the File Download status window.

During the download, the printer's flash memory will be erased, and CLEARING FLASH will display on the operator panel. At this time, PNE may appear to stop operating. This is normal, and the entire download process should take no more than fifteen minutes.

**NOTE:** Be sure to calibrate your thermal printer after you download a configuration to it. See "Running Auto Calibrate" in the printer's *User's Manual*.

You can also download a series of files to several printers at once using folders. Select a folder and select **Applications ▶ File Download**. All of the appropriate files inside the selected folder download to all of the printers inside that folder.

**NOTE:** Downloading a configuration file does not immediately update the printer's active configuration. You must activate a downloaded configuration using the Load Config. setting in the operator panel. Refer to the printer's *User's Manual* for details.

See page 85 for examples of using the printer database and the File Download application to download files.

### Downloading Examples

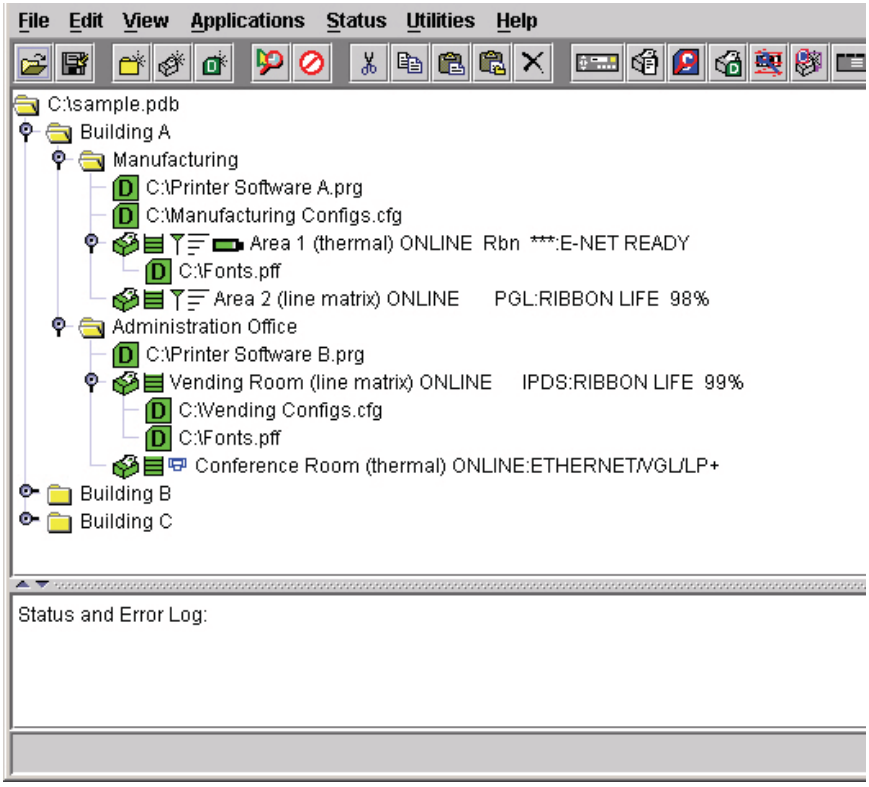



**Figure 77 Sample Database**

In this sample printer database (Figure 77), the printers are organized according to different parts of the building. Each area contains its own printers and Download files.

In the Manufacturing folder, two printers share the same program and configuration Download files, the Area 1 printer has a flash Download file (in this example, a fonts file), and the Area 2 printer has no flash Download file.

In the Administration Office folder, two printers share a program Download file, the Vending Room printer has a configuration and a flash Download file, and the Conference Room printer has no configuration or flash Download file.

The Building B and Building C folders are collapsed.

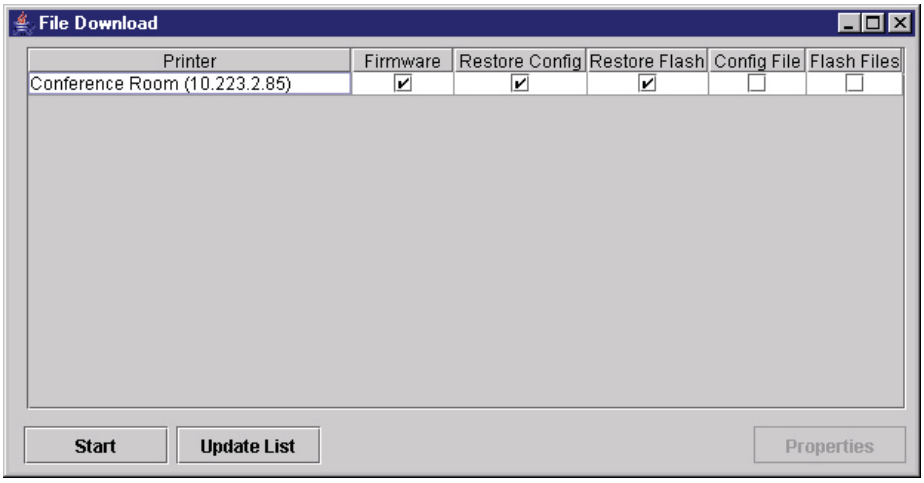



**Figure 78 File Download: Conference Room Printer**

**Example 1**

In this example, the user selected the Conference Room printer, then selected **Applications ▶ File Download** or clicked the (file download) button. The File Download dialog box opens. See Figure 78.

The Conference Room printer will download a program (firmware) file, and the configurations and flash memory will restore

**IMPORTANT** **If you uncheck Restore Config or Restore Flash, the configurations or flash memory will erase when you initiate a program file download.**

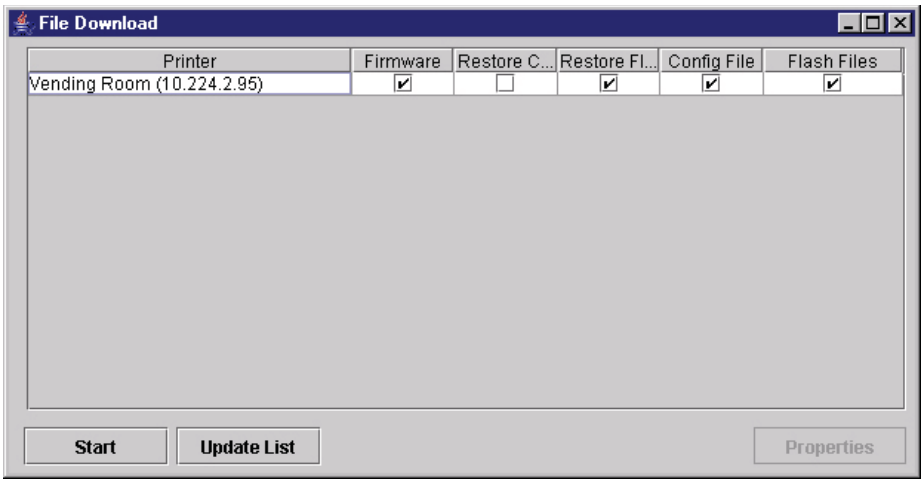



**Figure 79 File Download: Vending Room Printer**

### Example 2

In this example, the user selected the Vending Room printer, then selected **Applications ▶ File Download** or clicked the (file download) button. The File Download dialog box opens. See Figure 79.

The Vending Room printer will download a program (firmware), configuration, and flash file, and the flash memory will be restored.

To see a summary of the files the printer will download, double-click the printer or select the printer and click **Properties**.

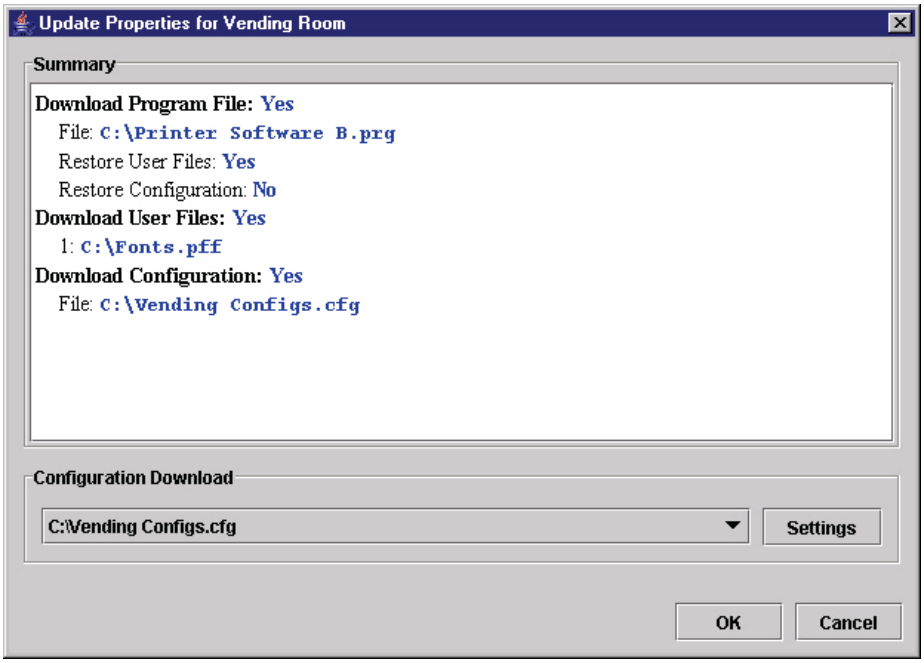



**Figure 80 Update Properties for the Vending Room Printer**

The update Properties dialog box opens. See Figure 80.

In this example, the Vending Room printer will download the Printer Software B.prg program file, the Vending Configs.cfg configuration file, and the Fonts.pff flash file.

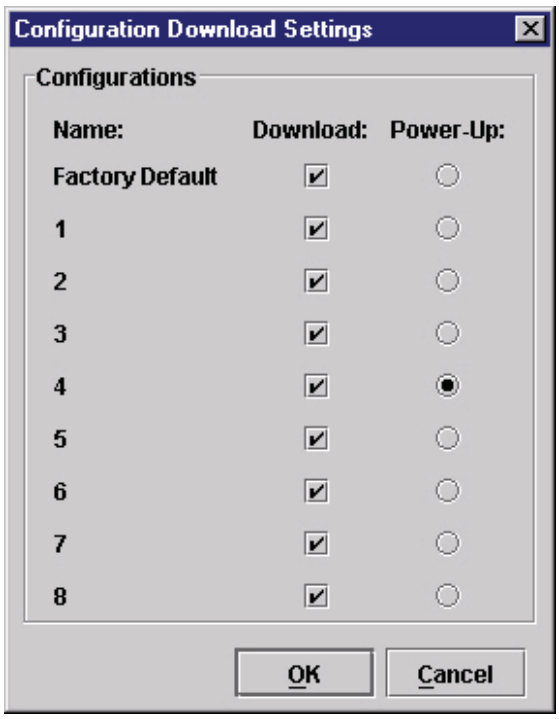



**Figure 81 Configuration Download Settings**

Since the printer will download a configuration file, you can click **Settings** to open the Configuration Download Settings dialog box. See Figure 81.

You can select or deselect specific configurations within the configuration file you want to download. Only the selected configurations will download. You can also select which of the configurations will be set as the Power-Up configuration.

In this example, the printer will download all configurations, and the Power-Up configuration will be set to configuration 4.

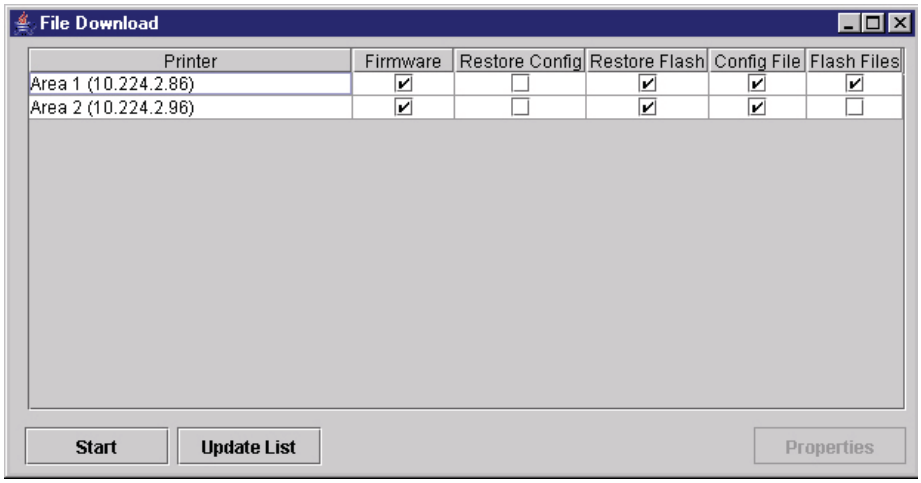



**Figure 82 File Download: Manufacturing**

**Example 3**

In this example, the user selected the Manufacturing folder, then selected **Applications ▶ File Download** or clicked the (file download) button. The File Download dialog box opens. See Figure 82.

In this example, the Area 1 and Area 2 printers will download the same program (firmware) file and a configuration file, since both files are in the same folder as the two printers (see Figure 77). In addition, the Area 1 printer will download a flash file.

Both printers will have their flash memories restored.

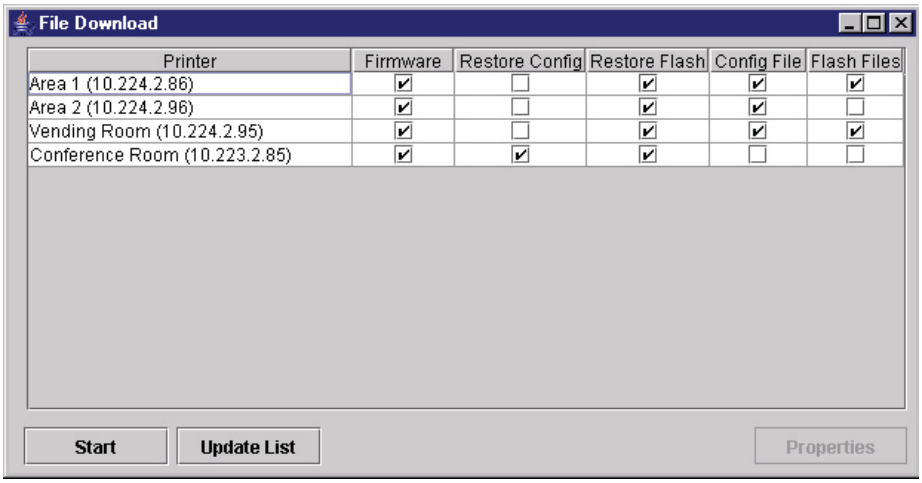



**Figure 83 File Download: Building A**

**Example 4**

In this example, the user selected the Building A folder, then selected **Applications ▶ File Download** or clicked the (file download) button. The File Download dialog box opens. See Figure 83.

In this example (refer to Figure 77):

- The Area 1 and Area 2 printers will download the same program (firmware) and configuration files, and their flash memories will be restored.
- The Area 1 printer will download a flash file.
- The Vending Room and Conference Room printers will download the same program file.
- The Vending Room printer will download a configuration and a flash file, and its flash memory will be restored.
- The Conference Room printer will not download a flash or configuration file, but its configurations and flash memory will be restored.

**IMPORTANT** **Make sure the same printer is not listed more than once in the File Download dialog box.**

## Recovery File

Whenever a printer downloads a program (firmware) file, the configurations and flash memory are erased. You can choose to restore the configurations and/or flash memory, but if during the download the power interrupts or the connection severs, the files will be lost and will not restore.

PNE makes a recovery file of the configurations and flash memory before they are erased. The recovery file is located in the PNE installation directory.

If a download fails, the Status and Error Log will display the location of the recovery file. The file is named after the printer name in the printer database, followed by a **.par** extension (printer archive).

Add a download file under the printer that failed during the download process. Open the Define Download File dialog. Click the browse button and navigate to the location of the recovery file. The recovery file is displayed in the Status and Error Log. Click OK to define the download file.

**IMPORTANT** **It is necessary that a program file be used with your recovery file. Make sure that you add a program file under the printer in the database or enable it if it is disabled.**

Click the printer to download and open the File Download application. Click Start to download the recovered files and settings to the printer.

**NOTE:** The properties and the download settings cannot be changed when you are using a recovery file. Recovery files are not deleted by the File Download application once an error occurs. This file should be deleted once the printer has the recovered configuration settings and flash files.

The **.par** archive contains the configuration file, which is named after the name of the printer in the printer database. The archive also contains the flash files, which are named exactly as they appeared in the flash memory.

# GPIO Manager

See GPIO Manager on page 183.

# Media Profiler

The Media Profiler application is only available for thermal printers. It provides a means to analyze media sensing problems. You can use it on labels that are difficult to profile using the standard printer profiling method. If necessary, you can capture, document, and send this information to professional service centers for further analysis.

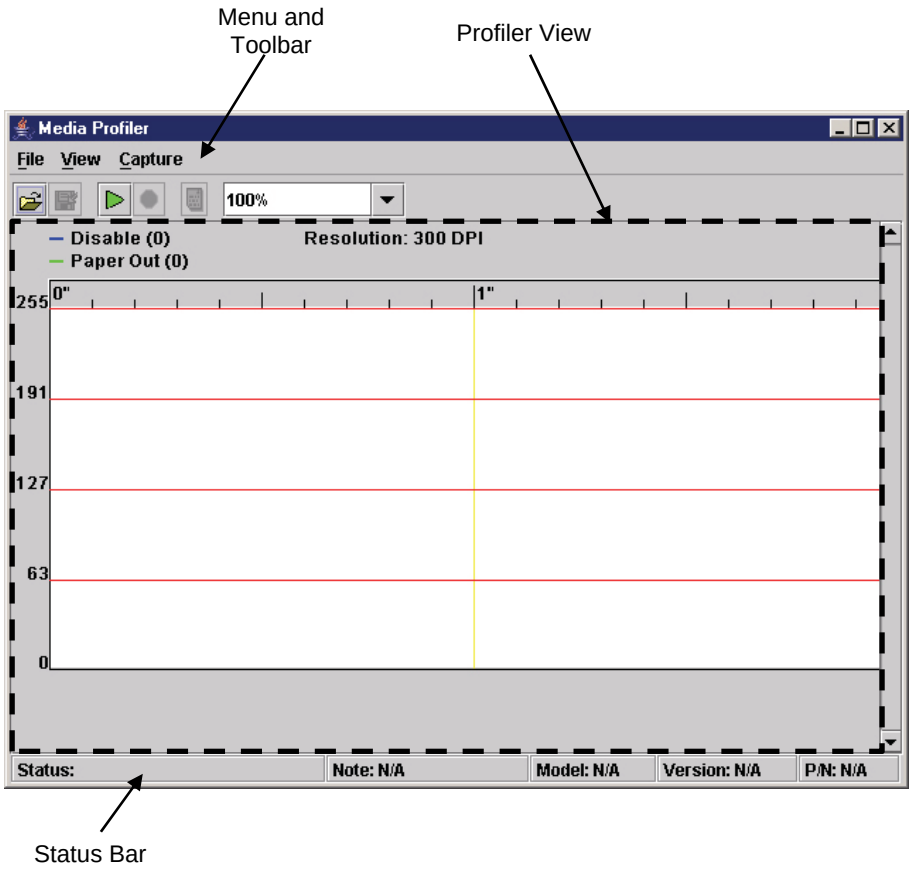



**Figure 84 Media Profiler Window**

To access the Media Profiler application, select **Applications ▶ Media Profiler** or click the (media profiler) button. The Media Profiler will open with no profiler data loaded or captured. It is divided into four sections, the menu bar, toolbar, profiler view (which contains the profiler graphic), and status bar. See Figure 84.

## The Menu And Toolbar

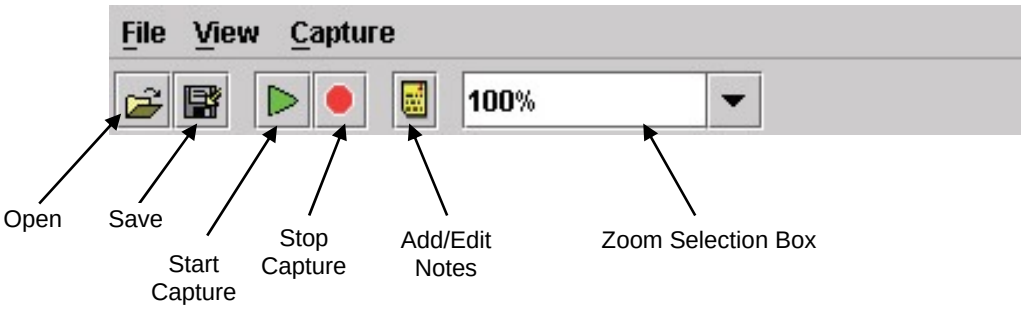



**Figure 85 Media Profiler Menu and Toolbar**

### File

**Open:** Opens a dialog wherein the user can select a previously saved file that contains profiler data. Media profiler files use the **.mpd** extension (Media Profiler Data).

**Save/Save As:** Saves captured data to disk for later reference or for use in another program. The file will save with the **.mpd** extension by default.

**Notes:** To add notes to captured data. Since the first line of the notes will display in the status bar (see The Status Bar on page 97), use short and distinct information that will be included in screen captures.

**Exit:** Exits the Media Profiler application. You will be warned if any data needs to be saved.

### View

**Show Crosshair:** When this menu item is checked (the default), a crosshair will display when the mouse pointer is hovering above the profiler graphic (see Figure 87 on page 93).

**Clear:** This will clear the profile view. The user will be informed if the captured data has not been saved.

## Capture

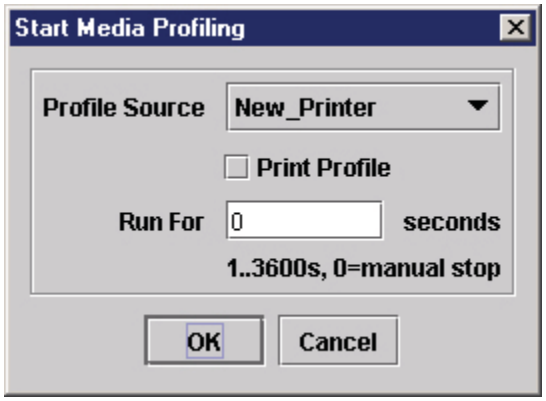



**Figure 86 The Start Media Profiling Dialog Box**

**Start:** Opens the Start Media Profile dialog box. See Figure 86.

From the Profile Source drop-down menu, you can choose an available printer from the printer database. This is the source for the media profile test.

If you check the Print Profile checkbox, the profiler data will also print on the installed media. The Run For value determines how long the profiler test will run. If you select **0** seconds (the default), the test will run until you stop the capture (click the stop capture button, press F6, or select **Capture ▶ Stop**).

**NOTE:** You can always stop a capture before a specified time elapses.

After you click **OK**, the Media Profiler will attempt to establish a connection with the selected printer. If a connection is established, it will check if the printer supports capturing the media profiler data. If it does, the profiler test will start. The profiler test will run until the specified time has elapsed or until you stop the capture.

**Stop:** This action is enabled while a profiler test is running. If selected, it will stop the currently running profiler test.

## Profiler View

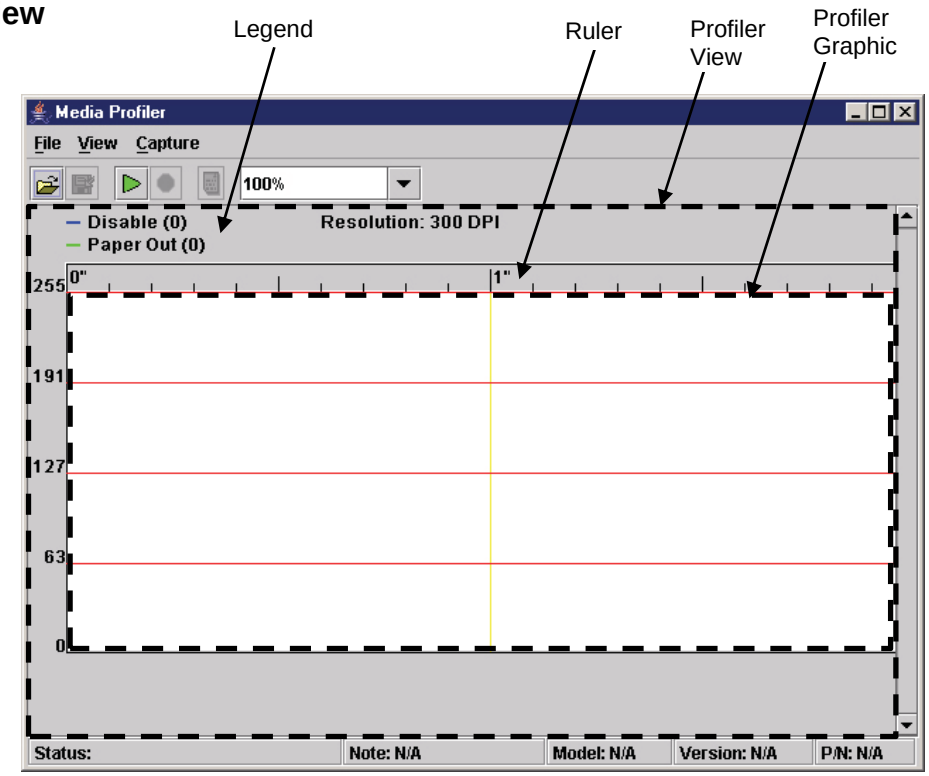



**Figure 87 Profiler View**

The center part of the Media Profiler window is the profiler view. The profiler view is divided into three sections: the legend, ruler, and profile graphic. See Figure 87.

### Legend

The legend displays the current values for two thresholds: Sensor Type and Paper Out. These values are set to zero by default since no threshold values have been received. These values are updated when the capture starts.

Sensor Type can be one of the following: Disabled, Mark, Gap, Advanced Gap, or Advanced Notch. By default it is set to Disabled. When dynamic sensing is enabled on the printer, the value of Sensor Type is Dynamic.

### The Ruler

The ruler displays the length of the captured profile in inches. The ruler has small ticks every tenth of an inch, and a larger tick ever half inch. A resolution of 300 DPI is used by default to determine the length. When the profile capture starts the actual DPI will be retrieved from the printer and the ruler will update to reflect the correct DPI.

### Profile Graphic

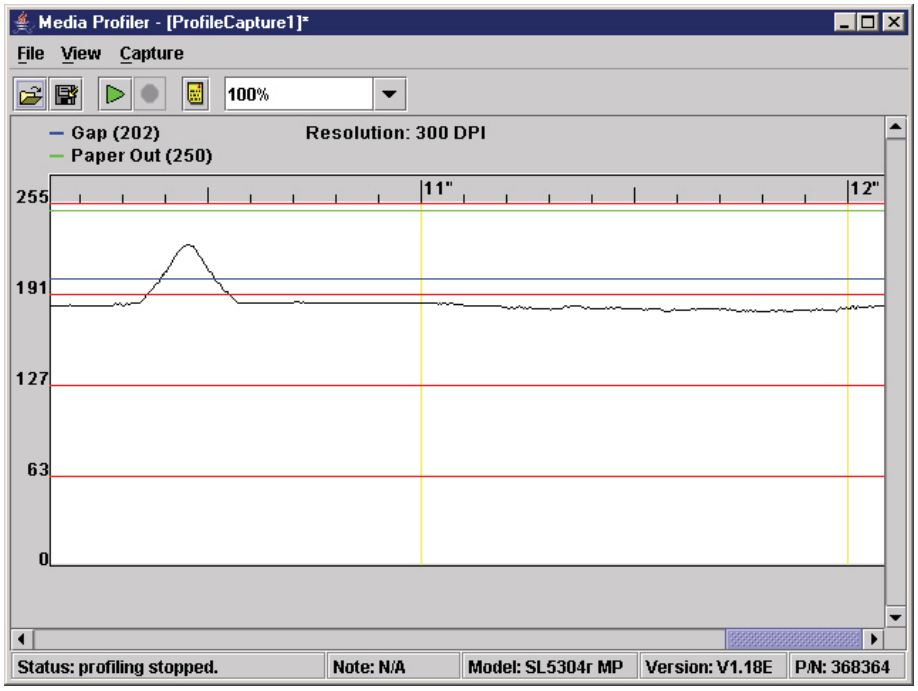



**Figure 88 Profiler Graphic**

The profile graphic has four horizontal divider lines to indicate the quarter values of the sample data. When the capture starts, the samples of the profiler data will display on the graph.

The printer will send out the profiler sample data on regular intervals and the profiler view will be updated automatically. If the profiler graph is too wide to be shown in one window, a scroll bar will appear to be able to scroll the graph.

The printer sends out one sample for each dot, so 300 samples per inch will be received for a 300 DPI printer. During the capture, the view will auto scroll to show the last captured profiler data until the specified time has elapsed or you stop the capture. See Figure 88.

When the profiler test starts, the printer will send out the current threshold values. The thresholds are indicated by colored horizontal lines on the profiler graphic: blue for the Sensor Type threshold and green for the Paper Out threshold. If dynamic sensing is enabled on the printer, the Sensor Type threshold will be shown dynamically similar to the sample data.

### The Crosshair

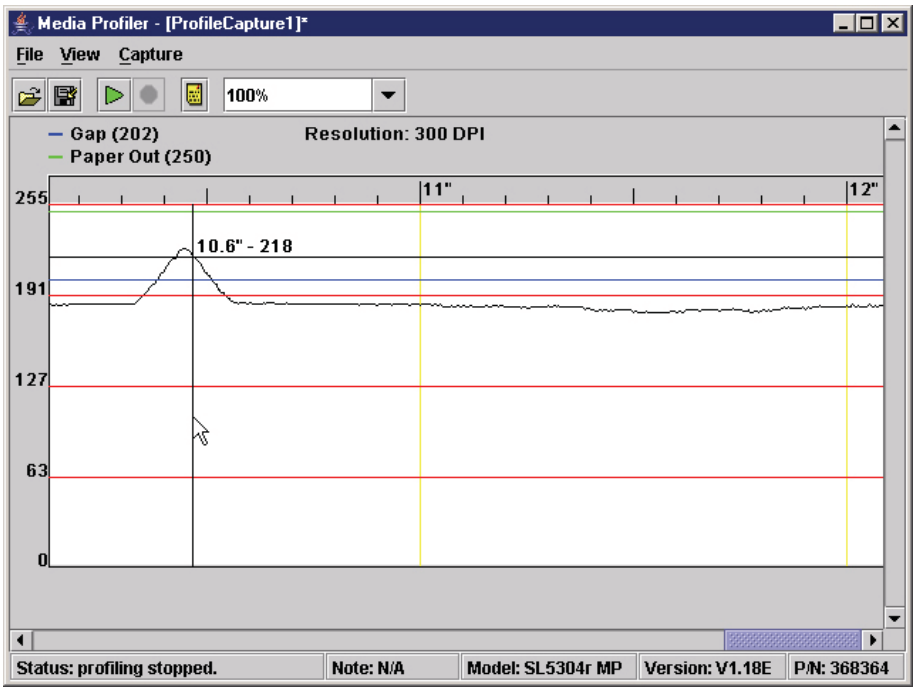



**Figure 89 The Crosshair**

The crosshair appears when the Show Crosshair menu item is checked (the default). When the pointer hovers above the profiler graphic, a crosshair is shown to indicate the sample value at that location and the distance to the origin. See Figure 89.

Press the **Ctrl** key to change the crosshair into a horizontal line that follows the mouse vertical position. You can use this to determine the optimal sensor values.

**NOTE:** Set the zoom factor to display the entire graph for this feature. See Zoom on page 96.

## Zoom

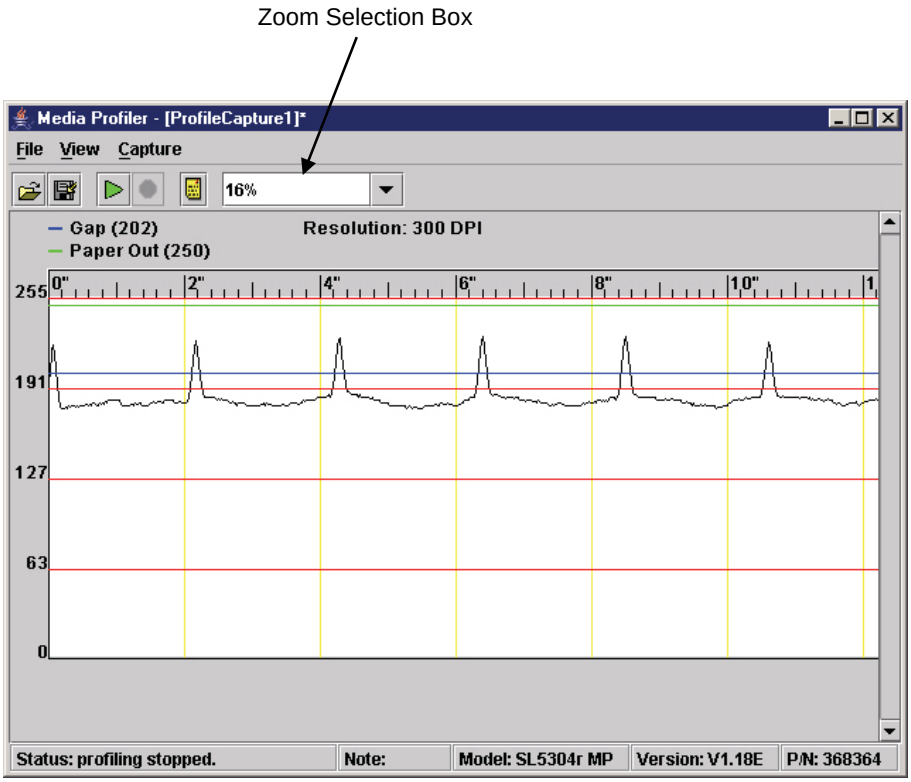



**Figure 90 Zooming**

You can use the zoom selection box to set the zoom factor. See Figure 90. You can enter a zoom factor or select a predefined zoom factor. The valid range is 5% to 400%.

If you have a mouse with a scroll wheel, the wheel can be used to zoom in and out. The zoom factor in the zoom selection box will update to reflect the current zoom factor.

You can zoom to display the entire graph in on window and determine the maximum and minimum sample values using the crosshair.

### Adjust the Origin

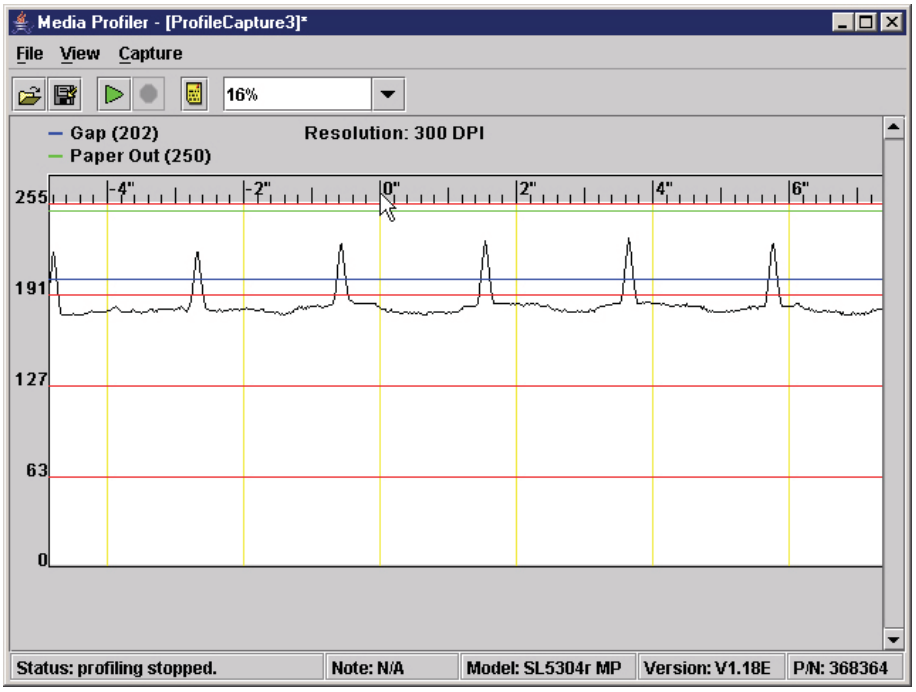



**Figure 91 Adjusting the Origin**

By default the origin of the graph is located at the first sample of the captured data (leftmost position). You can adjust the origin by clicking on the ruler and dragging the origin to the desired location. See Figure 91.

You can use this to determine the length/slippage of scanned labels in conjunction with the crosshair.

### The Status Bar

The status bar is at the bottom of the Media Profiler window (see Figure 84 on page 91.) and is divided into five sections. The first section displays status messages. The second section displays the first line of the notes, if notes were added (see Notes on page 92). The last three sections display the model, version, and part number from the printer being profiled. By default these are set to N/A.

### For More Information

Refer to “Running Media Profile” in the *User’s Manual*.

# Operator Panel

PNE includes a virtual operator panel that simulates all the functions of the physical operator panel on your printer. See Table 5 below which lists the different virtual operator panels.

**Table 5 Virtual Operator Panels**

| Figure | Page | Printer |
|---|---|---|
| Figure 92 | page 98 | P8000 line matrix (cabinet) |
| Figure 93 | page 99 | P8000 line matrix (pedestal) |
| Figure 94 | page 100 | P7000 line matrix (cabinet and pedestal) |
| Figure 96 | page 101 | SL4M/T4M thermal |
| Figure 97 | page 101 | SL5000/T5000 thermal |

The layout of the operator panel changes to visually simulate the printer being used (line matrix or thermal), but the keys and indicators function as described on page 102, regardless of the type of printer used.

The virtual operator panel uploads special font tables from the printer and uses them to match the printer's actual front panel display. If viewing Asian language symbols, the virtual operator panel determines and displays the proper number of lines.

To access the operator panel, select the appropriate printer from the printer database and then select **Applications ▶ Operator Panel** or click the (operator panel) button.

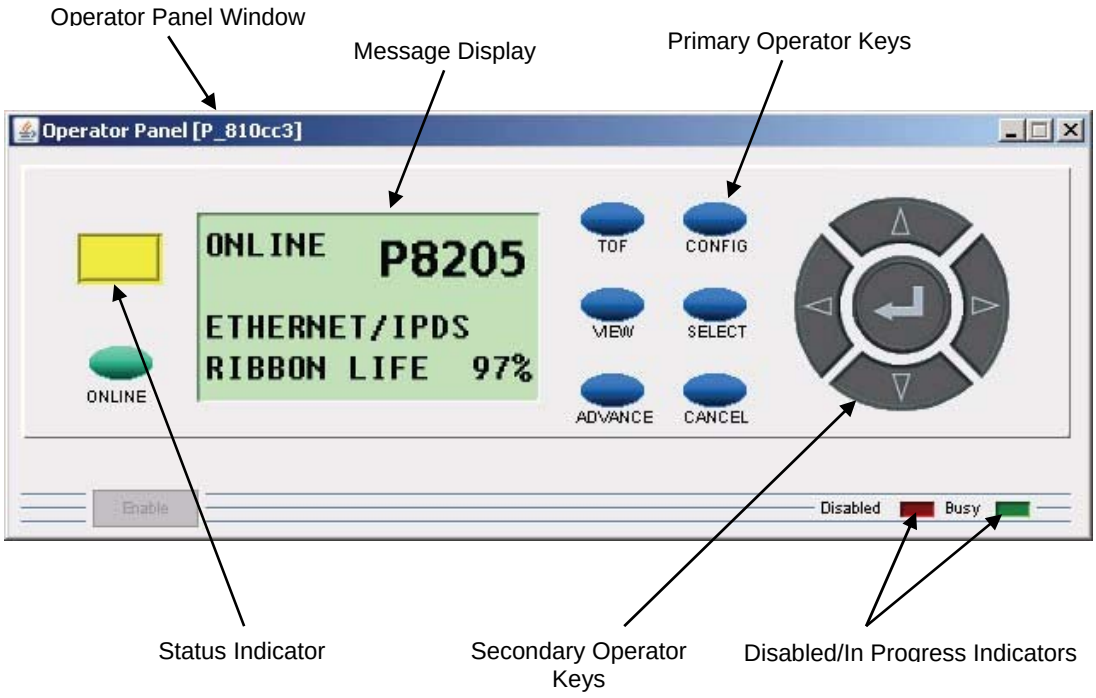



**Figure 92 Line Matrix Printer Virtual Operator Panel (P8000 Cabinet)**

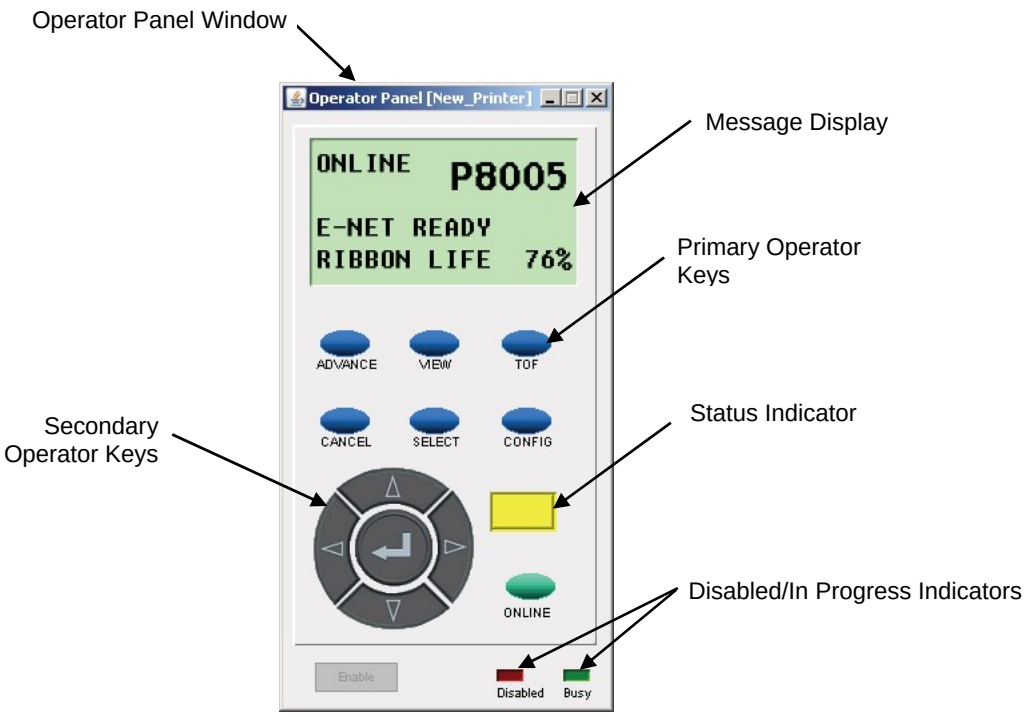



**Figure 93 Line Matrix Printer Virtual Operator Panel (P8000 Pedestal)**

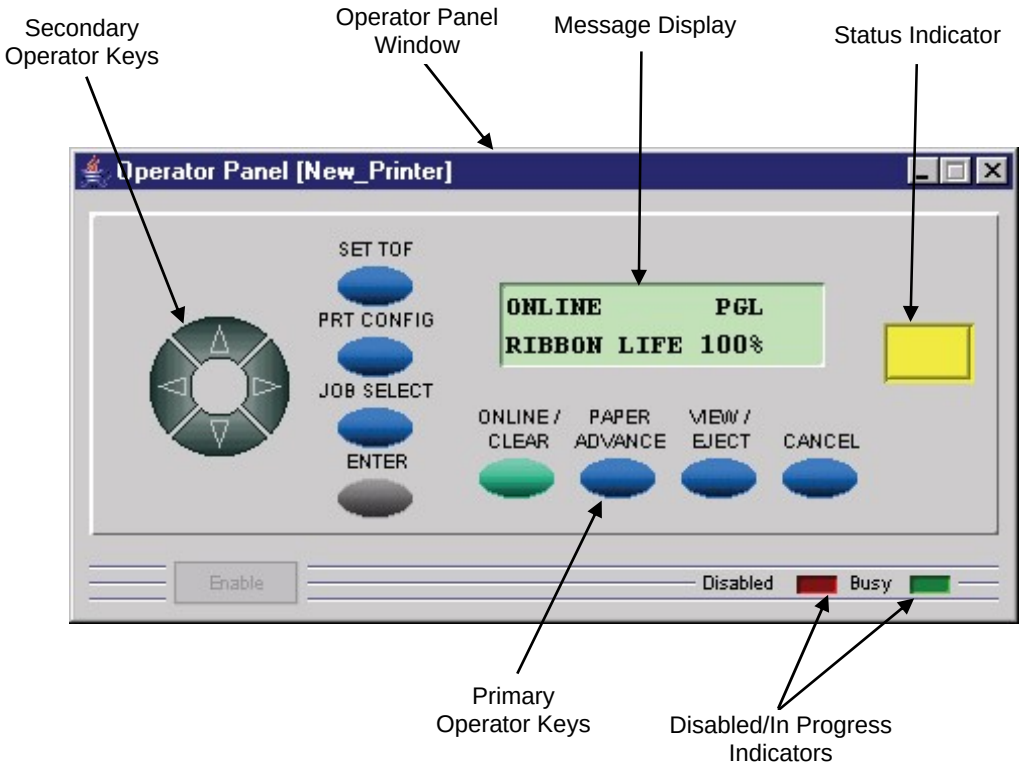


**Figure 94 Line Matrix Printer Virtual Operator Panel (P7000 Cabinet and Pedestal)**

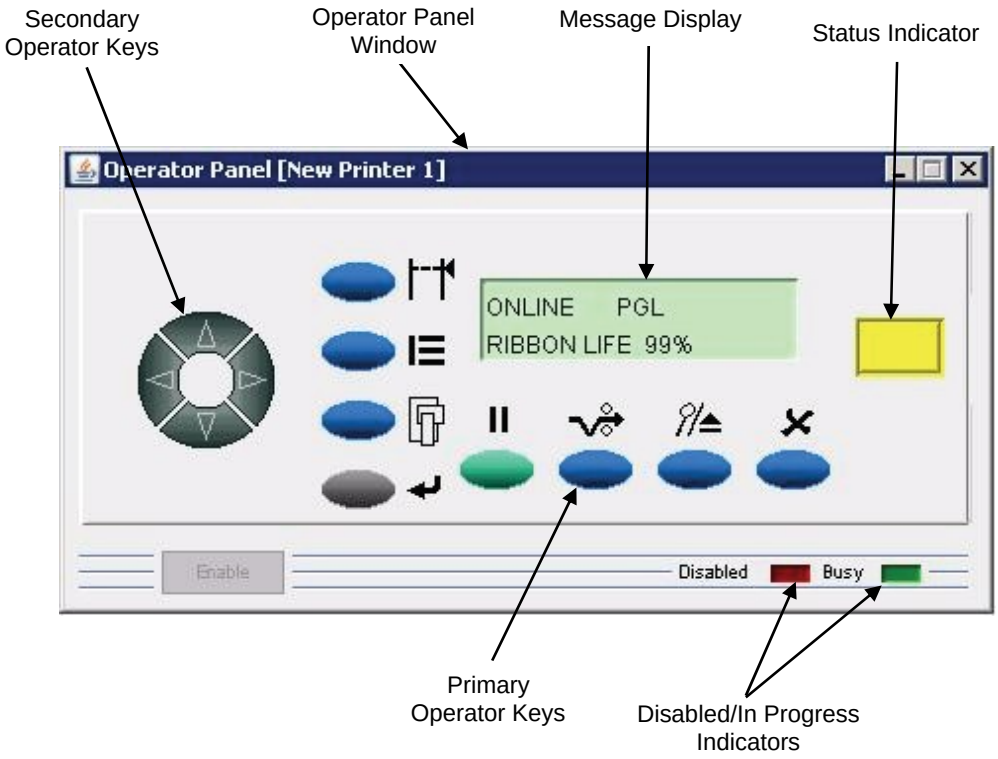



**Figure 95 Line Matrix Printer Virtual Operator Panel (P7000 Ribbon Cartridge Cabinet and Pedestal)**

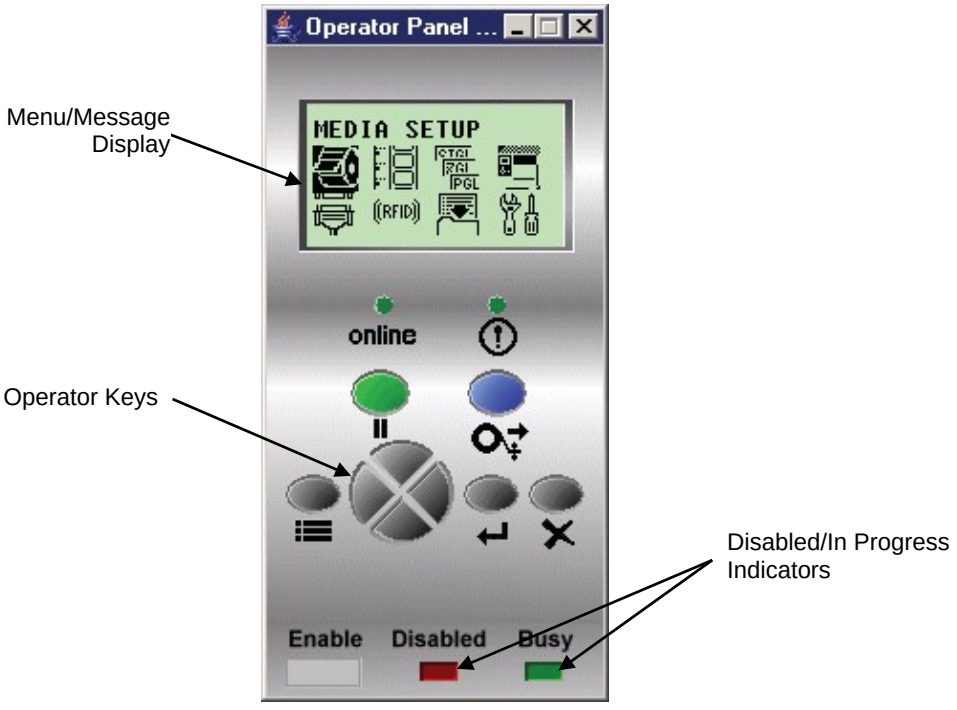


**Figure 96 Thermal Printer Virtual Operator Panel (SL4M/T4M)**

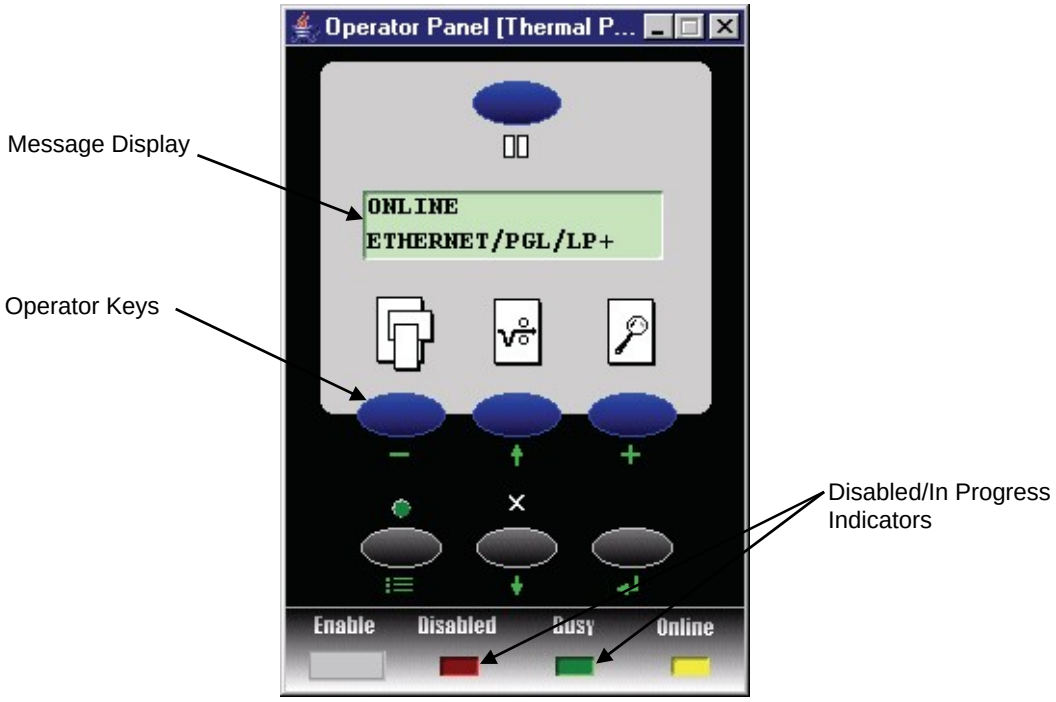



**Figure 97 Thermal Printer Virtual Operator Panel (SL5000/T5000)**

**Figure 98 Thermal Printer Virtual Operator Panel (T8000)**

## Primary/Secondary Operator Keys

Clicking the primary and secondary operator keys in the operator panel causes the printer to perform the same actions as if you were pressing the keys on the physical operator panel. For example, when the printer is online, click the **ONLINE** key (line matrix and laser printers) or the **II** (**PAUSE**) key (thermal printers) to take the printer offline. Click the **ONLINE** (or **PAUSE**) key again to place the printer back online.

Some functions require pressing multiple keys at the same time. To simulate this, hold down the **Shift** key on your host keyboard as you select each key. The selected keys change color to indicate that they are part of the multiple key press. Release the **Shift** key, and the selected keys on the operator panel activate as if they were pressed simultaneously.

For example, to unlock the ENTER (↵) key, hold down the **Shift** key on your keyboard, then click **UP** and **DOWN** (line matrix printers) or the Down (↓) and ↵ keys (thermal printers). Release the **Shift** key, and the ENTER (↵) key unlocks.

To perform some functions you must press keys for different lengths of time. For example, on a line matrix printer, in offline mode, pressing and releasing the **PAPER ADVANCE** key quickly on the operator panel performs a line feed; pressing and holding the **PAPER ADVANCE** key for more than a second advances the paper to the next top-of-form. The same is true for the virtual operator panel. Click and release the **PAPER ADVANCE** key quickly to perform a line feed. Click and hold the key down for longer than a second, and the **PAPER ADVANCE** key turns a different color and advances the paper to the next top-of-form.

**NOTE:** For an explanation of the functions of each primary and secondary operator key, refer to the printer's *User's Manual.*

## Message Display

The message display shows what is displayed on the physical operator panel. Use the message display to configure menu options and read error messages.

## Status Indicator

The status indicator displays the current operating mode:

**Online mode:** The indicator displays bright green.

**Offline mode:** The indicator displays black.

**Fault mode:** The indicator flashes.

**NOTE:** The virtual operator panel for the T8000 printer does not have any status indicators. Please look at the message display for the current printer status.

## Disabled Indicator

Normally, when you control the printer via the operator panel, the Disabled light is off, and the Enable button underneath the status indicator is grayed out. While PNE has control of the physical operator

panel, the message PRINTER UNDER REMOTE CONTROL appears on the physical operator panel to alert others that the printer is being controlled remotely.

However, if someone presses a key on the printer, the virtual operator panel disables. The Disabled indicator lights up, and the Enable button activates. Click the **Enable** button to give control of the printer back to the virtual operator panel.

**NOTE:** The virtual operator panel for the T8000 printer does not have a disabled indicator. The virtual operator panel and the printer's front panel are active at the same time.

### In Progress Indicator

This light flashes when the printer is working on a job or moving paper.

**NOTE:** The virtual operator panel for the T8000 printer does not have a progress indicator.

# Information Capture

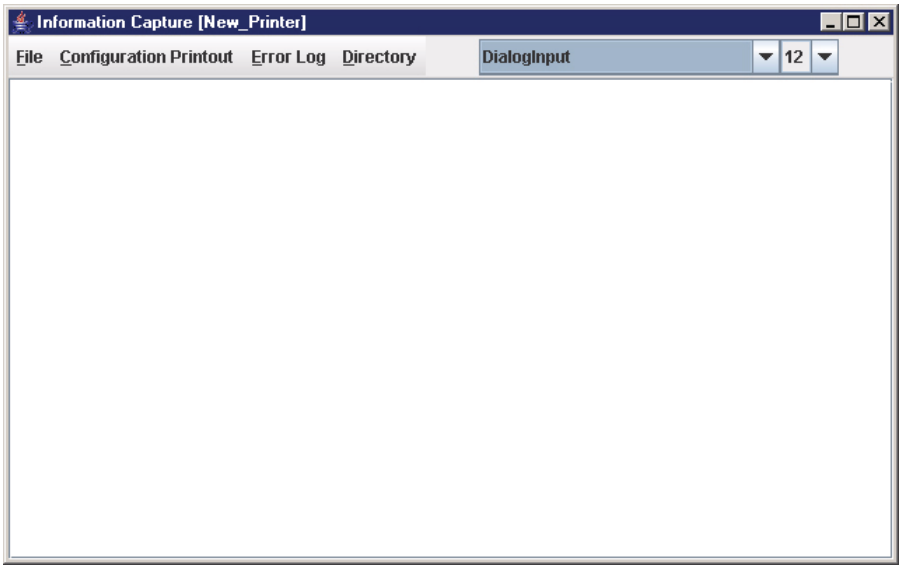



**Figure 99 Information Capture Window**

To access the Information Capture application, select a printer from the printer database and select **Applications ▶ Information Capture** or click the (information capture) button. See Figure 99.

The Information Capture application allows you to view the configurations or error logs saved in the printer's memory and save them as a text file to your local hard drive.

Loading a configuration into the Information Capture does NOT change the active configuration — this is a *view only* application. If you want to change the active configuration, use the Configuration Editor (see page 65) or the operator panel.

The following are descriptions of the Information Capture menus.

### File

**Save As:** Saves the configuration or error log displayed in the Information Capture window as a **.txt** text file on your local hard drive. This **.txt** file can be opened in any word processing program.

**Print:** Prints the text of the information captured to the host computer's default printer.

**Clear Window:** Clears the Information Capture window of any displayed configurations or error logs.

**Close:** Closes the Information Capture window.

## Configuration Printout

**Current/Factory/Power-Up/All/1-8:** Choose which configuration you want to view. If you choose more than one configuration without clearing the window, each additional configuration adds to the end of the display. See Figure 100.

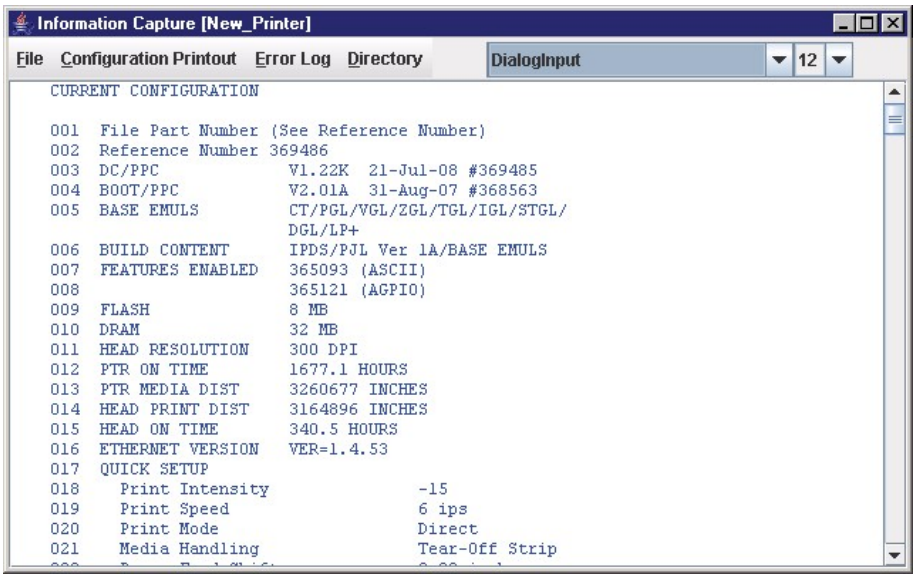



**Figure 100 Configuration Printout**

## Error Log

**All Errors:** Displays the printer's error log.

**Clear:** Clears all errors from the printer's memory.

**NOTE:** The printer's error log and the Status and Error Log at the bottom of the main printer database window of PNE are separate. Clearing the printer's error log does not clear the Status and Error Log.

## Directory

**Flash File System:** Displays the file system information for your printer.

**NOTE:** If your printer is equipped with an EM (External Memory), the files will be displayed in two areas: one for the printer's internal flash memory, and one for the EM. See Figure 101.

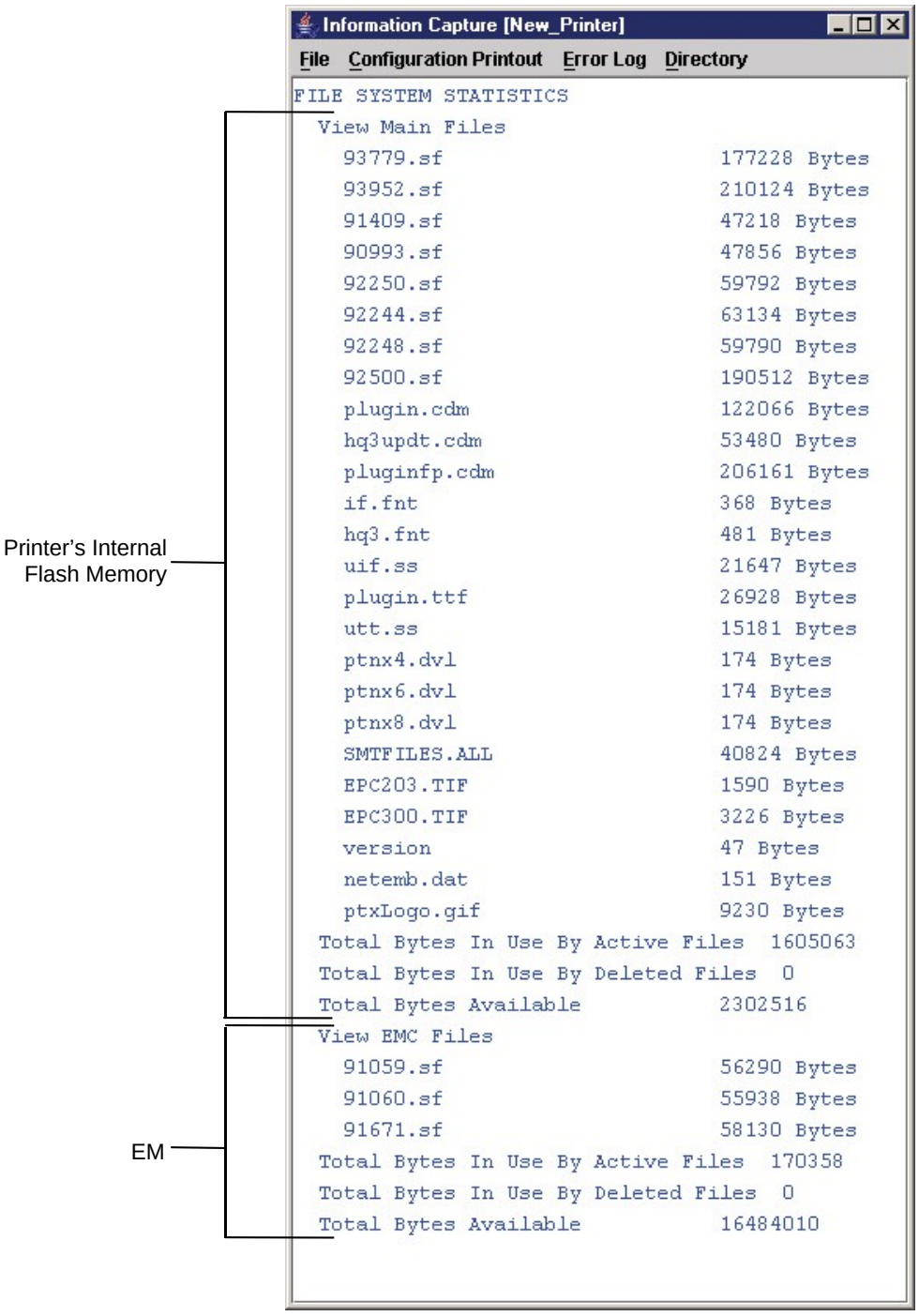



**Figure 101 Directory: Printer's Internal Flash Memory and EM**

# AutoID Data Manager

See AutoID Data Manager on page 250.

# ODV Quality Wizard

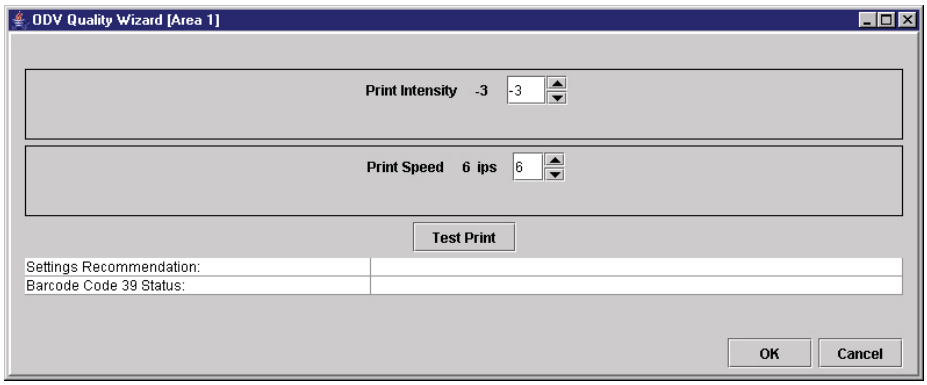



**Figure 102 ODV Quality Wizard Window**

**NOTE:** You must set the following in the VALIDATOR menu to use the ODV (online data validator) Quality Wizard:

- Set Telemetry Path to Network Port.
- Set Telemetry Data to Full Report or Validation Mode.

The ODV Quality Wizard is a function that helps you select the best combination of print speed and print intensity that will produce optimal bar code output. It displays controls that allow you to select a print speed and a print intensity.

Click the **Test Print** button to print and validate a test bar code pattern. Based on the validation results, the ODV Quality Wizard provides setting suggestions to optimize the bar code quality.

**IMPORTANT** **Do not follow any suggestions if "Barcode Code 39 Status" does not display "Pass."**

Click **OK** to save these changes in Configuration 1. Configuration 1 then becomes the Power-Up configuration (see page 65). Click **Cancel** to not save the changes.

**IMPORTANT** **Clicking the Close button in the upper-right corner functions the same as clicking OK.**

**NOTE:** The ODV Quality Wizard is printer specific, and not all printer models have ODV Quality Wizard support. Printers without ODV Quality Wizard support display the error message:

Operation not allowed on this type of printer.

# Speed Keys

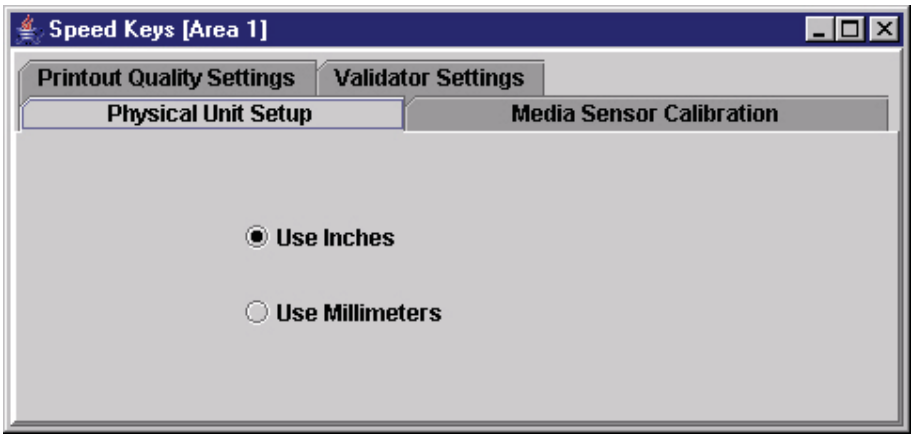



**Figure 103 the Speed Keys Window**

The Speed Keys are single buttons that allow you to perform a specific operation without having to traverse the operator panel menu structure. The Speed Keys assist you in performing repetitive functions associated with printer configuration or maintenance.

To access Speed Keys, select a printer then select **Applications** Y **Speed Keys** or click the **Speed Keys** button. See Figure 103.

Changes made using Speed Keys are changed in the printer and saved in Configuration 1. Configuration 1 then becomes the Power-Up configuration (see page 65).

**NOTE:** Speed Keys are printer specific, and not all printer models have Speed Key support. Printers without Speed Key support display the error message:
Operation not allowed on this type of printer.

The Speed Keys are grouped according to their use:

- Physical Unit Setup
- Media Sensor Calibration
- Printout Quality Settings
- Validator Settings

**NOTE:** For an explanation of the functions the Speed Keys perform, refer to the printer's *User's Manual*.

# Job Capture

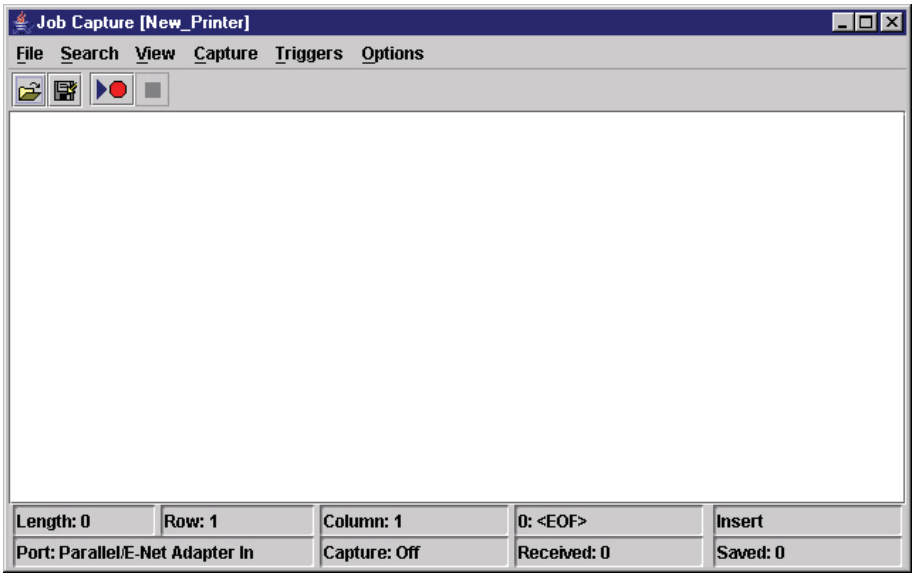



**Figure 104 Job Capture Widnow**

Job Capture is an application that captures host datastreams through a specified host interface. This aids in debugging and diagnosing printer errors when working with technical specialists.

To access the Job Capture application, select a printer from the printer database and select **Applications ▶Job Capture** or click the (job capture) button.

Job Capture allows you to capture, modify, analyze, and save information to a file.

To use Job Capture:

1. Be sure the computer running PNE is connected to the printer using the diagnostic port. See Printer Setup on page 11.
2. Select **Capture ▶ Data From** and then select the interface the printer will use to receive the file you want to capture.
3. Select **Capture ▶ Start** to place PNE in capture mode. The interface sends the information to the terminal window until you turn off capture mode.
4. Select **Capture ▶ Stop** to stop the capture.

The capture window displays the capture information in three formats: Text, Hex, and Capstone. Select **View ▶ Display Format** to choose the information format. Select **View ▶ Display Control Codes** to view the control codes embedded in the file.

Once you capture the file and choose the display options, you can save the information to your local hard drive. Select **File ▶ Save As** and enter a file name. PNE saves the captured information as a **.cap** text file. You can open a **.cap** file in any word processing program.

Select **File ▶ Clear Window** to clear all capture information from the terminal window. Select **File ▶ Quit** to close the Job Capture application.

## Job Capture Features

### File

### Open

Opens a Job Capture file.

### Save/Save As

You can save captured data to disk for later reference or for use in another program. To save the captured data, select **File ▶ Save** or **File ▶ Save As**. Data from Twinax sources can be saved in either Hex or Capstone format.

### Clear Window

To erase captured data, select **File ▶ Clear Window**. If you have not already saved the data, a prompt appears and asks if the data should be erased without saving.

### Quit

Exits the Job Capture program.

### Search

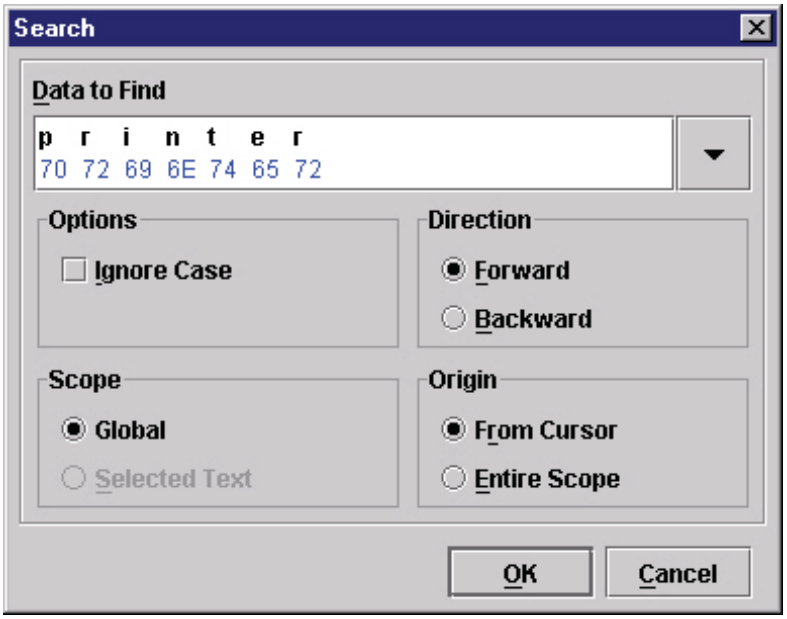



**Figure 105 Search Captured Data**

### Search Captured Data

You can search captured data for specific sequences. Select **Search ▶ Search Captured Data**. Enter the data as a hex or text string. Click **OK**, and the matching data highlights.

To further refine your search, you can choose whether or not to ignore the case, and specify the direction and origin of the search. If you have text selected, you can also choose whether to search the selected text or all text (Global). Use the down arrow in the upper-right corner to see a history of your searches. See Figure 105.

**Search Again**

To continue searching, click **Search Again**. A message appears if the search is unsuccessful.

**View**

**Display Format**

Data displays in three ways:

- Text
- Hex
- Capstone

Capstone is for Coax/Twinax applications. You can edit Capstone data in Hex mode only.

**Display Command Codes**

- **Normal:** Codes do not display.
- **Dots:** Dots represent the code.
- **Mnemonics:** Codes display within brackets. For example, Line Feed is <LF>, Carriage Return is <CR>, etc.

**Capture**

**Start**

Starts the capture. You can also use the (start capture) button.

**Stop**

Stops the capture. You can also use the (stop capture) button.

**Data From**

Selects the capture source of data. Options include:

- Parallel/E-Net Adapter In
- Serial In
- Serial Out
- Twinax Host Data
- Coax Host Data
- C/T Base Emulation
- PCI Ethernet In
- USB In

**NOTES:**

- USB port is available only on SL5000r/T5000r, SL4M/T4M, P8000 and T8000 printers.
- Serial In and Serial Out ports are not available on the T8000 printers.
- Twinax Host Data, Coax Host Data and C/T Base Emulation ports are not available on the SL4M/T4M, P8000 and T8000 printers.

**IMPORTANT** **If the printer is connected to PNE through USB, you cannot perform a job capture or send a print job. USB connectivity can only be used to either manage the printer or print a job. When using the USB for printer management, you can print data using all other interfaces except USB.**

### Triggers

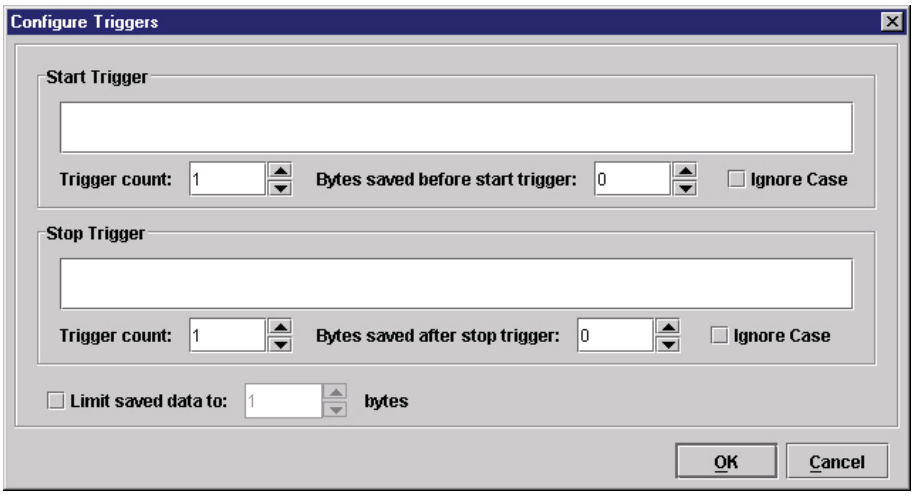



**Figure 106 Configure Triggers Window**

A Trigger allows a selective capture of host data. You need to specify two triggers, a start trigger and an end trigger. Select **Triggers ▶ Configure**. See Figure 106.

Enter triggers as text or hex strings with a maximum length of 256 characters. Job Capture scans received data for the start trigger sequence. Once found, data capture begins and continues until Job Capture finds the end trigger.
If you do not set a start trigger, all data is captured when the Job Capture starts. If you do not set an end trigger, the data will continue to capture until you stop it.

A second trigger option is a trigger count. You can set Job Capture to start or stop once it finds a set number of start and/or stop triggers. The window that displays captured data shows any lines containing start triggers and highlights the start trigger strings. You can also use the Search feature to search through captured data.

The Ignore Case check box allows character case to be ignored. Check the box to search for a string regardless of character case, and the data will capture once the string is found.

**NOTE:** You cannot apply triggers to Coax/Twinax and TCP/IPDS jobs.

### Options

### Disable Printing

Select **Options ▶ Disable Printing** to capture data without printing.

# Web Access

You can access your printers using a web browser. You can monitor the status, open an operator panel, check the configurations, and access the printer web page.

**NOTE:** To access your printer using a web browser, you must enable the Web Server and XML Server services (see page 29). Remember to exit and restart PNE to enable the service.

## The PNE Web Site URL Address

Open a web browser. In the URL address field, type **`http://`**, followed by the host IP address of the workstation running PNE or the host name (computer name, not case-sensitive), followed by a colon (:), and then the Web Server port number (see page 29).

For example:

*`http://10.224.5.121:8080`*

or:

*`http://lab21042:8080`*

**NOTE:** Make sure the port number does not conflict with another port number designated for a different purpose.

Press **Enter**, and the web page for your designated printer appears. See Figure 108 on page 112.

To find the host name using Windows, right-click **My Computer** on the desktop and select **Properties**. Click the **Computer Name** (or **Network Identification**) tab, then click **Change** (or **Properties**). The computer name appears in the Computer name field. See Figure 107.

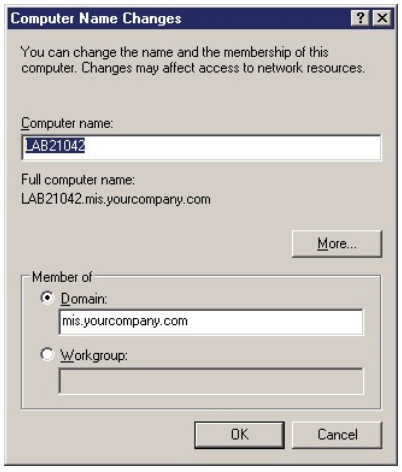



**Figure 107 Finding Your Host Name In Windows**

## Login To The PNE Web Site

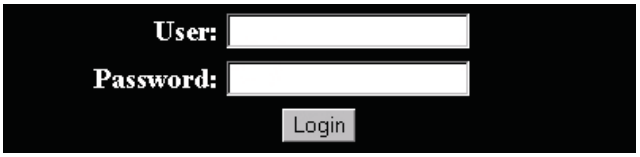



**Figure 108 The PNE Web Site**

By default, three categories of login privileges are available. See Table 6 for a list of categories and their corresponding user names and passwords.

**Table 6 User Login Options**

| Login Category | User name | Password |
|---|---|---|
| Standard | standard | standard |
| Supervisor | super | super |
| Administrator | admin | admin |

Type **admin** for the user name and password, then click **Login**. The Select Desired Page web page appears. See Figure 109.

**Figure 109 The Select Desired Page Web Page**

## Changing The User Password

**Figure 110 The Change Password Web Page**

You can change the default password. Click **Change Password Page**, and the Change Password web page appears. See Figure 110.

Enter a new password in the New Password and Retype Password fields, then Click **Change Password**. Your password changes and you return to the Select Desired Page web page.

## The Printer List Page

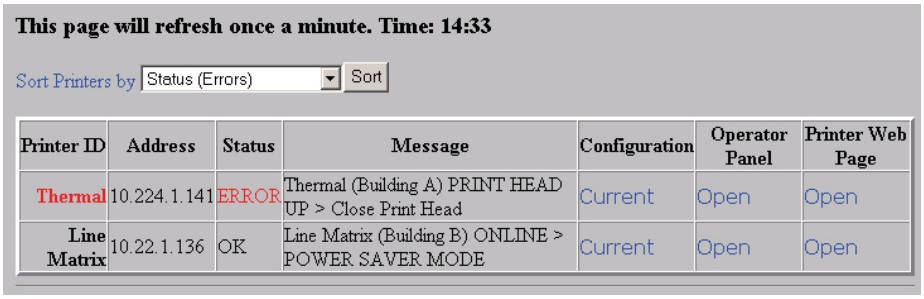



**Figure 111 The Printer List Web Page**

Click **Printer List Page**. The Printer List web page appears and lists the same printers found in the database pane. See Figure 111.

By default, printers are sorted by Status (Errors). You can also sort printers by Status (Warnings), Status (Online), Address (Ascending), and Address (Descending).

In the above example, the thermal printer displays an error because it is offline. Any printer not ready to print displays an error status.

For an explanation of the Printer List Page options, find the option in Table 7 and follow the corresponding reference.

**Table 7 Printer List Page Options**

| Web Page Option | Reference |
|---|---|
| Configuration | displays the printer's current configuration |
| Operator Panel | see page 97 |
| Printer Web Page | opens the NIC Home Page; refer to chapter three of the *Network Interface Card User's Manual* |

**NOTE:** Administrators and Supervisors can access all five options. Standard users can access only Configuration and Printer Web Page.

## Changing User Settings, IP Addresses, and IP Address Ranges

```
<?xml version="1.0" encoding="UTF-8" ?>
<!DOCTYPE ppmXML (View Source for full doctype...)>
- <ppmXML>
  - <LoginDatabase>
      <!--  For some user to access the printer information, they need to be
      added by userid.   -->
      <!--  The IP address of their machine also needs to be authorized.   -->
    - <UserDatabase>
        <!--  All the user names, their privilege type (standard, super, admin)
        needs to be added here   -->
        <userid password="standard" privilege="standard">standard</userid>
        <userid password="super" privilege="super">super</userid>
        <userid password="admin" privilege="admin">admin</userid>
      </UserDatabase>
    - <MachineDatabase>
        <!--  Individual address can be included or excluded from accessing the
        printer information.   -->
        <!--  ipAddressIncluded and ipAddressExcluded are used for individual
        addresses.   -->
        <ipAddressIncluded>10.22.1.121</ipAddressIncluded>
        <ipAddressExcluded>100.100.100.100</ipAddressExcluded>
        <!--  Use ipAddressIncludeRange and its start and end attributes to
        define the access range.   -->
        <ipAddressIncludeRange start="00.00.00.00" end="255.255.255.255" />
        <!--  Use ipAddressExcludeRange and its start and end attributes to
        define the invalid access range.   -->
        <ipAddressExcludeRange start="00.00.00.00" end="00.00.00.1" />
      </MachineDatabase>
    </LoginDatabase>
</ppmXML>
```

**Figure 112 The PpmLogin.xml File**

The PpmLogin.xml file, located in the PNE installation directory, contains user settings and the included/excluded IP addresses and IP address ranges. See Figure 112.

To modify this file, open it using a text editor.

**IMPORTANT** **The PpmLogin.xml file should only be modified by expert users. Incorrect entries in this file could render the Web Server service unusable.**

**User Settings**

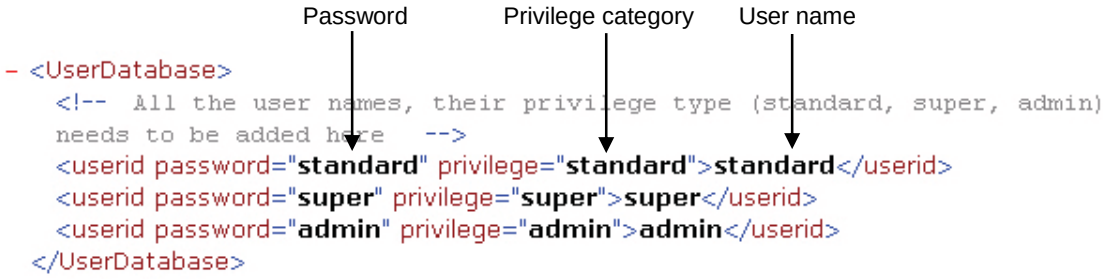



**Figure 113 User Login Parameters**

The user name, password, and privilege category are defined in the <UserDatabase> section of the file. See Figure 113.

**Password:** Defines the password for the designated user name. When you change the password using the Change Password web page, this information updates.

**Privilege Category:** Defines the privilege for the designated user name. The available options are: standard, super, and admin.

**User name:** Defines the user name. You can only change the user name by modifying this attribute.

You can add additional users by duplicating the following line in the <UserDatabase> section:

*<userid password="standard" privilege="standard"> standard</userid>*

### IP Addresses and IP Address Ranges

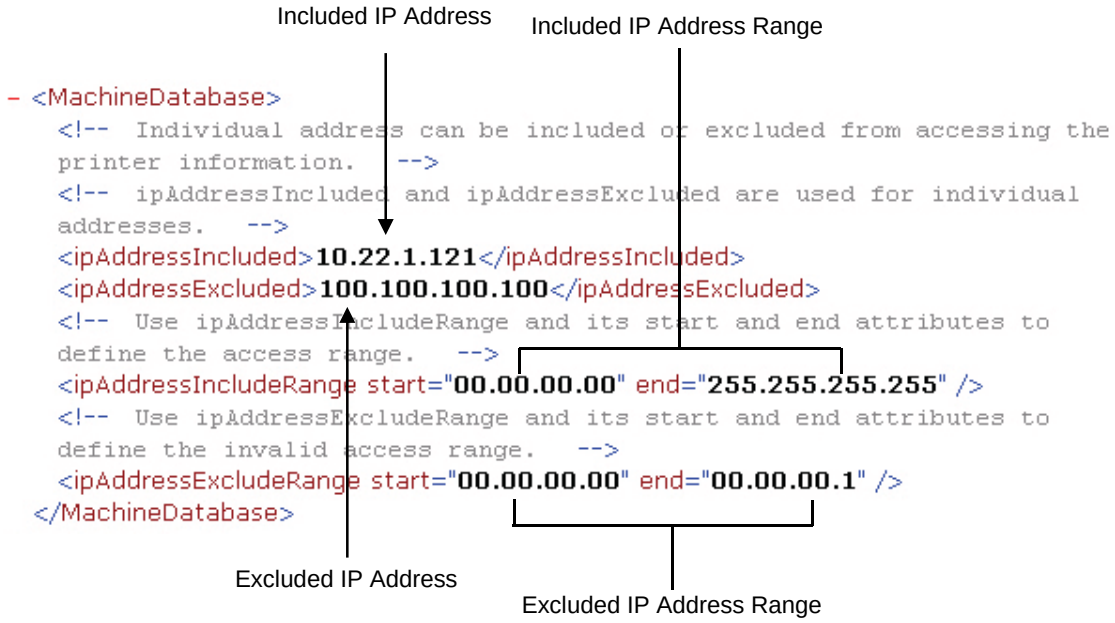



**Figure 114 Include/Exclude IP Address Options**

You can define which IP addresses are available to PNE for access. Any IP address not included or defined in the included range will be unavailable to PNE. In addition, any IP address excluded or defined in the excluded range will also be unavailable. The included and excluded IP addresses are defined in the <MachineDatabase> section of the file. See Figure 114.

**Address Included:** Defines which IP address to include.

**Address Excluded:** Defines which IP address to exclude.

**Address Include Range:** Defines the range of IP addresses to include.

**Address Exclude Range:** Defines the range of IP addresses to exclude.

You can add additional included/excluded IP addresses or IP address ranges by duplicating the corresponding lines in the <MachineDatabase> section:

*<ipAddressIncluded>10.22.1.121</ipAddressIncluded>*

**<ipAddressExcluded>100.100.100.100</ipAddressExcluded>**

**<ipAddressIncludeRange start="00.00.00.00"**
**end="255.255.255.255"></ipAddressIncludeRange>**

**<ipAddressExcludeRange start="00.00.00.00"**
**end="00.00.00.1"></ipAddressExcludeRange>**

# 4 Utilities

## Reboot Printer

Reboots the selected printer.

## Set Printer Password

PNE does not allow passwords to change unless the Supervisor password matches the password in the Printer Properties. See Security Tab on page 58.

**NOTE:** If a password exists but is unknown, you must clear it first. See Set Password on page 14.

To set the printer password in the database:

1. Double-click the printer name. The Printer Properties dialog box opens.
2. Click the **Security** tab.
3. Type the User and Supervisor passwords.
4. Check the **Supervisor Mode** check box.
5. Click **OK**.

To change the printer password:

1. Click the printer name to select it.
2. Select **Utilities ▶ Set Printer Password**. The Change Password dialog box opens.

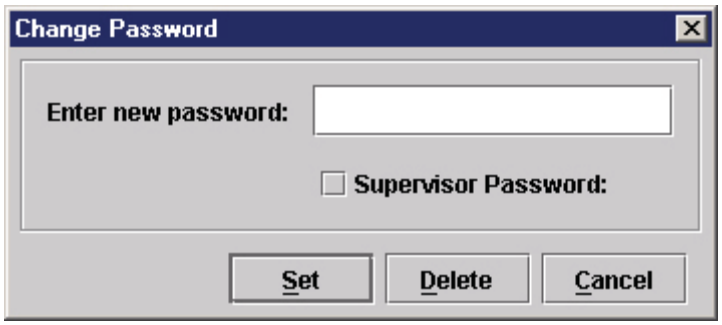



**Figure 115 Change Password Dialog Box**

3. Type the new password.
4. For a new Supervisor password, check the **Supervisor Password** check box. For a new User password, leave this box unchecked.
5. Click **Set**.
6. If you entered a new Supervisor password, double-click the printer name. The Printer Properties dialog box opens.

7. Click the **Security** tab.
8. Type the same password you entered in step 3 in the Supervisor Password field.
9. Click **OK**.

# Set Wireless Properties

**NOTE:** For a more thorough description of these settings, refer to the *Network Interface Card User's Manual*.

To set wireless properties, select a wireless printer from the printer database then select **Utilities ▶ Set Wireless Properties**.

The Wireless Properties dialog box contains five tabs: General, WEP Encryption, Kerberos, EAP, and WPA.

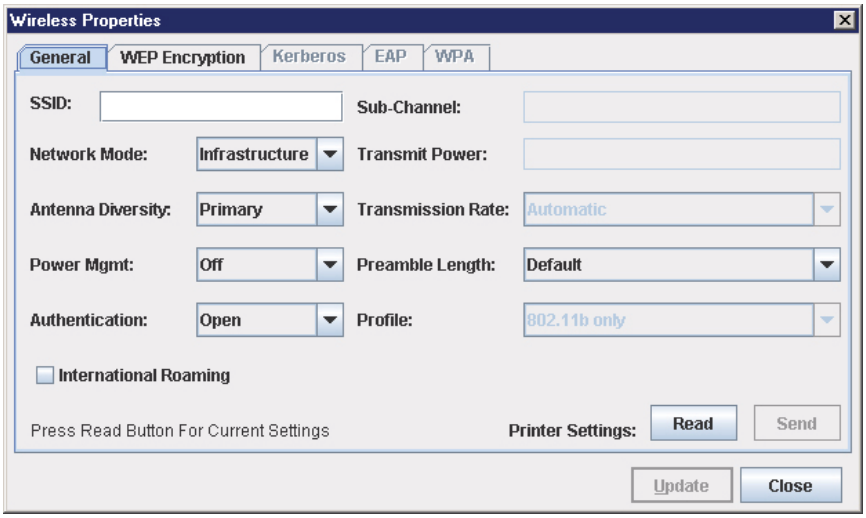



**Figure 116 Wireless Properties: General Tab**

## General Tab

You must click **Read** to obtain the printer's settings before you can modify them.

**NOTE:** If the NIC has a password assigned to the user **guest**, then a Telnet guest password is required. See Security Tab on page 58.

**SSID (Service Set Identifier):** A 1 to 32 case sensitive character string that identifies the SS network that the printer with a wireless NIC is a part of.

**Network Mode:** Determines if the client communicates using an access point (Infrastructure) or other clients peer to peer (Ad Hoc).

**Antenna Diversity:** The NIC supports a single (Primary and Auxiliary) and dual (Diverse) antenna mode.

**Power Saver Mode:** Determines if the NIC will go into a power saving mode (Modes 1 through 5) or stay powered up (CAM: Continuous Access Mode).

**Authentication:** Determines the authentication scheme: Open, Shared, Kerberos, or LEAP.

Open system authentication allows all devices that have the authentication algorithm number for open system to authenticate.

Shared key authentication involves a four step process using secure or encrypted text by means of WEP.

LEAP is to enable LEAP operation.

Kerberos is to enable Kerberos operation.

**Sub-Channel:** Determines the channel for the radio frequency card: 1 through 15 and Default.

**Transmit Power:** Determines the wattage of the transmission power: Max (100 mW - Default), 50% (30 mW), 25% (15 mW), 10% (5 mW), and 1% (1 mW).

**Transmission Rate:** Currently unavailable. Determines the rate of data transmission from the radio frequency card to the access point: 1 MHz, 2MHz, 5 MHz, 11 MHz, and Automatic.

**Preamble Length:** Determines the size of the packet header generated by the access point: Long, Short, or Default (set by the access point).

**Profile:** Determines the 802.11g Wireless (Wi-Fi) mode in which to operate.

**International Roaming:** Check this check box to enable roaming outside the home country.

When you are finished, click **Send** to transmit the values to the printer.

**NOTE:** If the NIC has a password assigned to the user **root**, then a Telnet root password is required. See Security Tab on page 58.

If you are not going to modify settings on any other tabs, you must update the printer for the settings to take effect. Click **Update** to update the printer.

**IMPORTANT** **Make sure the settings match those configured in the Access Point.**

## WEP Encryption Tab

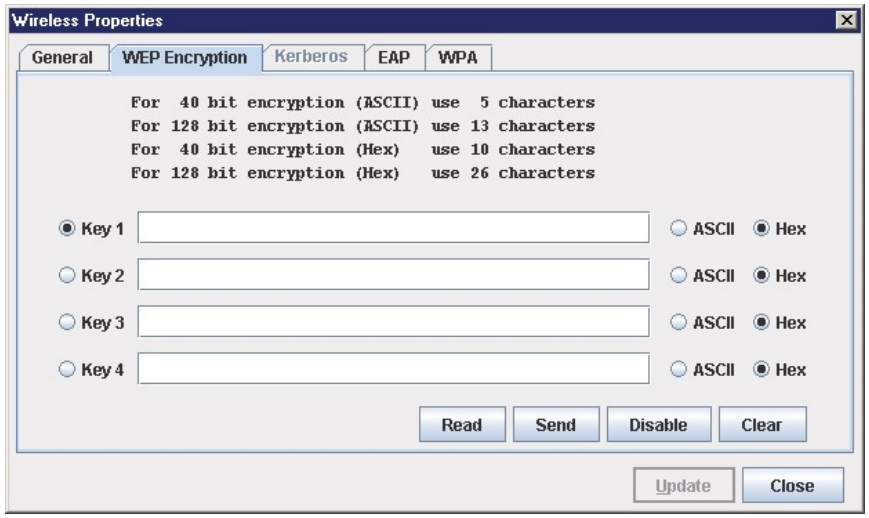



**Figure 117 Wireless Properties: WEP Encryption Tab**

You must click **Read** to obtain the printer's settings before you can modify them.

**NOTE:** If the NIC has a password assigned to the user **guest**, then a Telnet guest password is required. See Security Tab on page 58.

Select which key you want to use for Wireless Equivalency Privacy (WEP) encryption. Use the correct number and type of digits for your preferred encryption strength (40 or 128 bit), then select **ASCII** or **Hex**.

Click **Disable** to disable WEP encryption for the selected printer.

Click **Clear** to clear all keys displayed on the WEP Encryption tab simultaneously. (The keys stored in the NIC are not affected.)

When you are finished, click **Send** to transmit the values to the printer. You can transmit up to four keys at once, but only the selected key will become the active key in the printer.

**NOTE:** If the NIC has a password assigned to the user **root**, then a Telnet root password is required. See Security Tab on page 58.

**NOTE:** If the values are not in the selected format, or if the exact number of characters required is not entered, an error message will appear. Correct the problem, then click **Send** again.

If you are not going to modify settings on any other tabs, you must update the printer for the settings to take effect. Click **Update** to update the printer.

**IMPORTANT** **Make sure the settings match those configured in the Access Point.**

## Kerberos Tab

The Kerberos tab contains four sub-tabs: Print Server, KDC, Set Password, and Credentials.

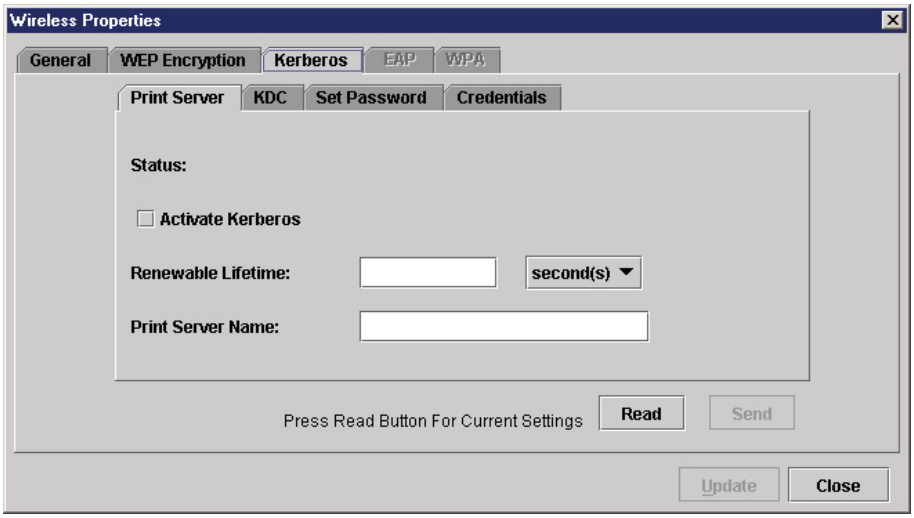



**Figure 118 Wireless Properties: Kerberos Tab - Print Server Sub-Tab**

### Print Server Sub-Tab

You must click **Read** to obtain the printer's settings before you can modify them.

**NOTE:** If the NIC has a password assigned to the user **guest**, then a Telnet guest password is required. See Security Tab on page 58.

**Status:** Displays Authenticated or Not Authenticated once an attempt to send Kerberos information has been sent.

**Activate Kerberos:** Check this check box to have the printer use Kerberos when the printer is using a wireless connection.

**Renewable Lifetime/Units:** The maximum allowable renewable lifetime in seconds, hours, or days. The range is 300 seconds to 3 days, or 0 (i.e., no limit). The default is 0.

**Print Server Name:** The name of the print server.

When you are finished, click **Send** to transmit the values to the printer.

**NOTE:** If the NIC has a password assigned to the user **root**, then a Telnet root password is required. See Security Tab on page 58.

If you are not going to modify settings on any other tabs, you must update the printer for the settings to take effect. Click **Update** to update the printer.

**IMPORTANT** **Make sure the settings match those configured in the Access Point.**

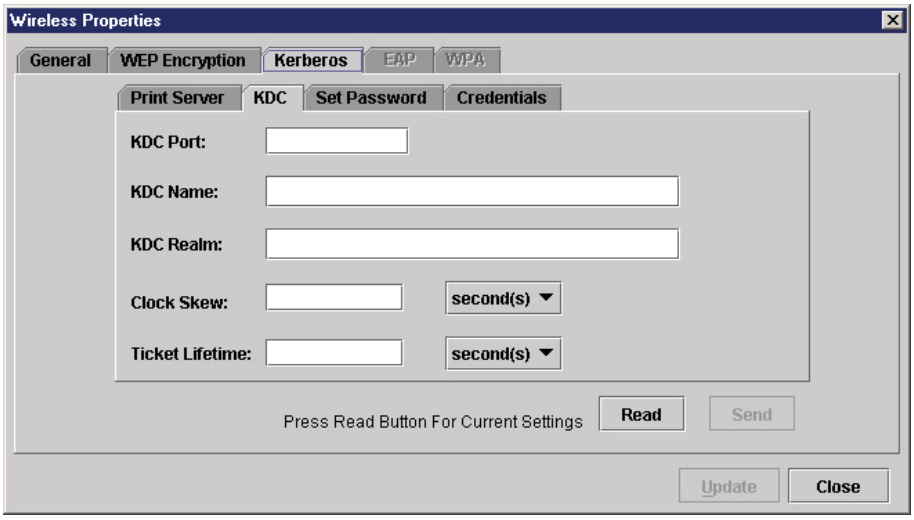



**Figure 119 Wireless Properties: Kerberos Tab - KDC Sub-Tab**

**KDC Sub-Tab**

You must click **Read** to obtain the printer's settings before you can modify them.

**NOTE:** If the NIC has a password assigned to the user **guest**, then a Telnet guest password is required. See Security Tab on page 58.

**KDC Port:** The TCP/UDP port number used by the KDC. The default is 88.

**KDC Name:** The name of the KDC which the Access Point is registered. The default is krbtgt.

**KDC Realm:** The realm of the KDC which the Access Point is registered. The default is **LOCALREALM**.

**Clock Skew/Units:** The maximum allowable time difference between the Print Server clock and the KDC clock, in seconds, hours, or days. The default is 300 seconds.

**Ticket Lifetime/Units:** The maximum allowable ticket lifetime in seconds, hours, or days. The range is 300 seconds to 3 days. The default is 10 hours.

When you are finished, click **Send** to transmit the values to the printer.

**NOTE:** If the NIC has a password assigned to the user **root**, then a Telnet root password is required. See Security Tab on page 58.

If you are not going to modify settings on any other tabs, you must update the printer for the settings to take effect. Click **Update** to update the printer.

**IMPORTANT** **Make sure the settings match those configured in the Access Point.**

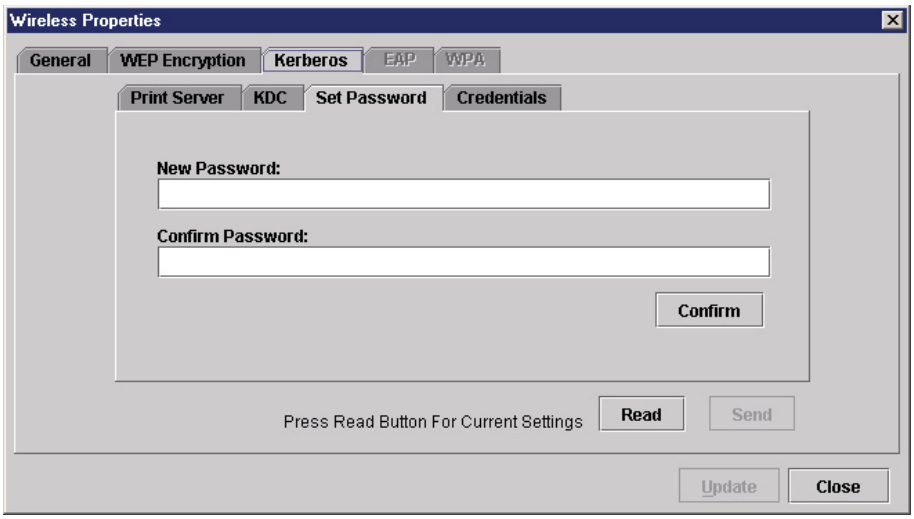



**Figure 120 Wireless Properties: Kerberos Tab - Set Password Sub-Tab**

### Set Password Sub-Tab

You must click **Read** to obtain the printer's settings before you can modify them.

**NOTE:** If the NIC has a password assigned to the user **guest**, then a Telnet guest password is required. See Security Tab on page 58.

**New Password/Confirm Password:** Use these fields to set the Kerberos password. Click **Confirm** to confirm that both the passwords match.

When you are finished, click **Send** to transmit the value to the printer.

**NOTE:** If the NIC has a password assigned to the user **root**, then a Telnet root password is required. See Security Tab on page 58.

If you are not going to modify settings on any other tabs, you must update the printer for the settings to take effect. Click **Update** to update the printer.

**IMPORTANT** **Make sure the settings match those configured in the Access Point.**

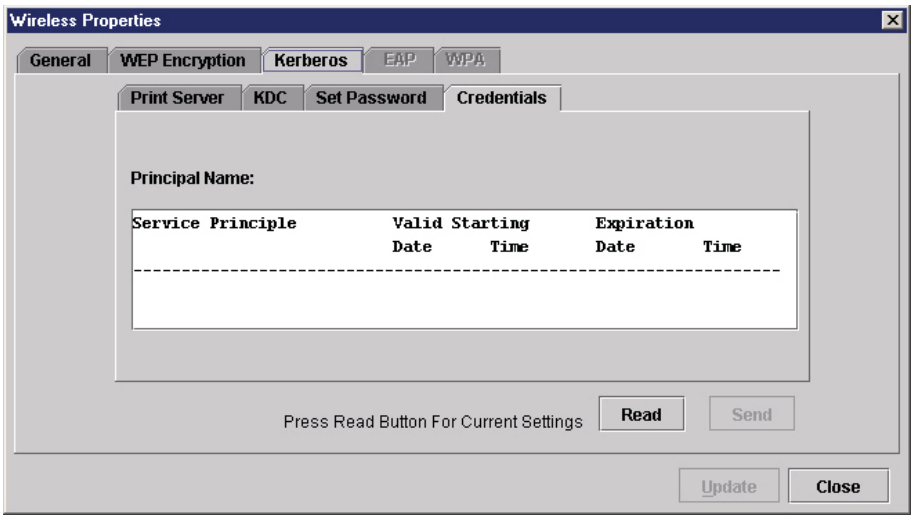



**Figure 121 Wireless Properties: Kerberos Tab - Credentials Sub-Tab**

### Credentials Sub-Tab

This tab displays the Service Principle, the date and time the settings are valid, and the date and time the settings expire.

## EAP Tab

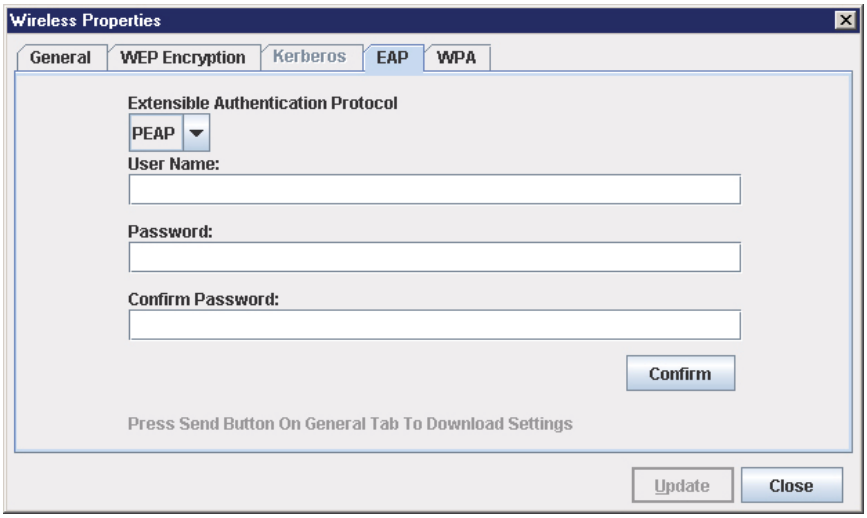



**Figure 122 Wireless Properties: EAP Tab**

You may choose one of three commonly used authentication methods that are supported on the NIC. The methods are PEAP, LEAP, and TTLS.

### User Credentials

Enter the User Name, Password, and Confirm Password corresponding to the RADIUS (Remote Authentication Dial-In User Service) server, then click **Confirm** to confirm the Password.

To enable EAP in the NIC, select the **General** tab. Click **Send** to transmit the EAP settings and the wireless properties defined in the General tab.

### WPA Tab

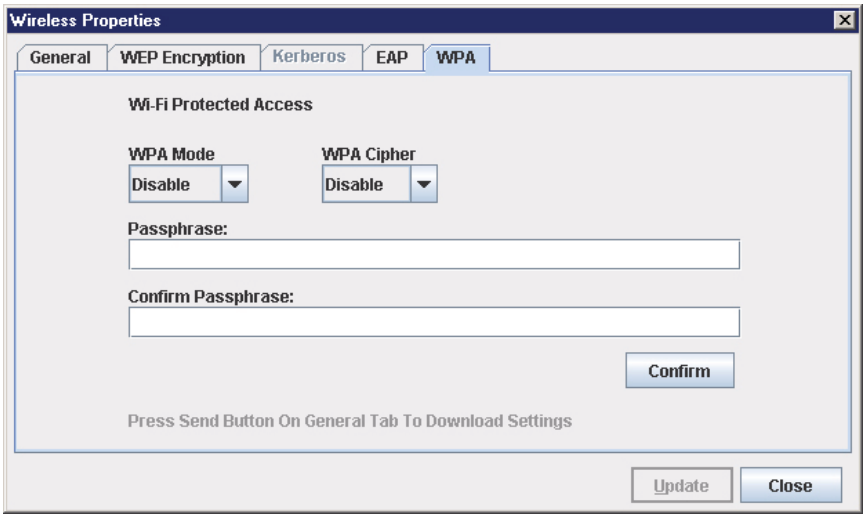



**Figure 123 Wireless Properties: WPA Tab**

This tab displays the information necessary for the WPA (Wi-Fi Protected Access) wireless security scheme.

**WPA Mode:** Selects the WPA wireless security mode. By default the mode is set to Disable thus disabling WPA security. If set to Personal, this selects a personal or pre-shared key mode for WPA security.

**WPA Cipher:** Selects the WPA Cipher wireless security setting.

**Passphrase:** Sets the individual bytes of the WPA Passphrase.

Refer to the printer's *User's Manual* and the *Network Interface Card User's Manual* for more information.

# Macro Utility

The Macro Utility allows you to create a series of ten buttons that will do a range of things such as sending a string of text to the printer to performing functions such as form feeds.

To access the Macro Utility, click the (macro utility) button at the far right of the toolbar, or select **Utilities ▶ Macro Utility**. The Macro Utility window opens. See Figure 124.

You can use the File menu options to save and open a set of macros.

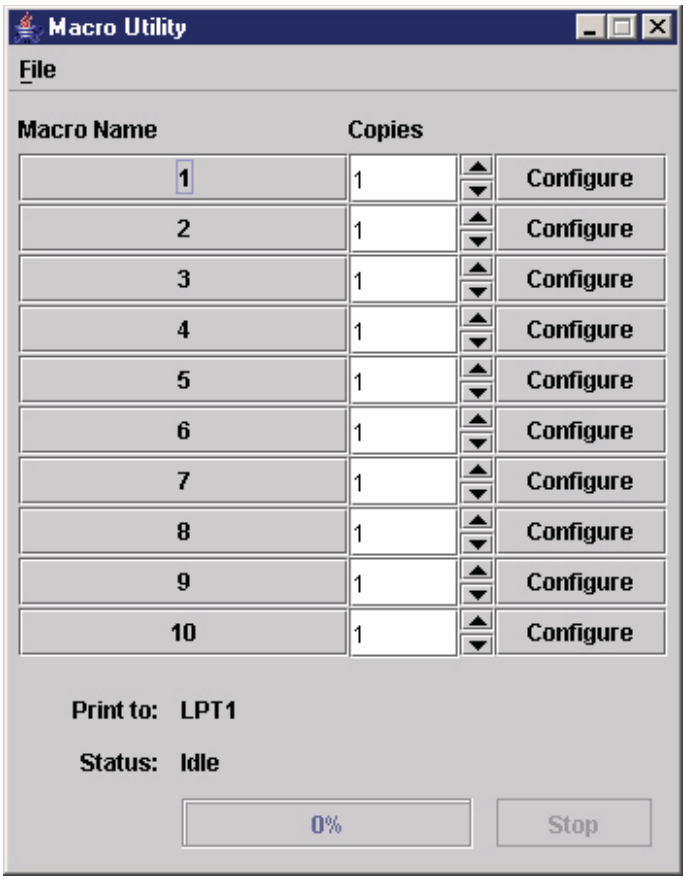



**Figure 124 The Macro Utility Window**

## Configure Macro

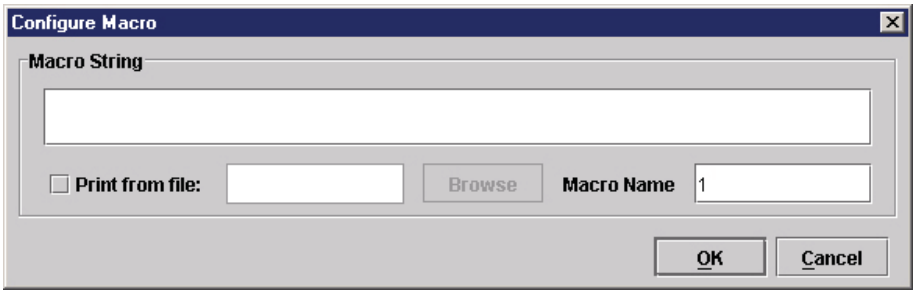



**Figure 125 The Configure Macro Dialog Box**

To create or edit a macro, click **Configure** to the right of the macro name (initially 1 through 10). The Configure Macro dialog box opens. See Figure 125.

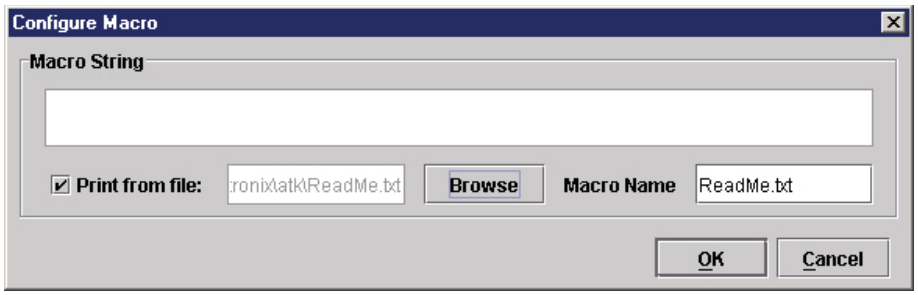



**Figure 126 The Print from file Check Box**

To use a file as a macro, check the **Print from file** check box. Then click **Browse** to locate your file (such as a **.txt** file). By default, the file name becomes the macro name. Rename it in the Macro Name field. See Figure 126.

Click **OK** to finish configuring the macro.

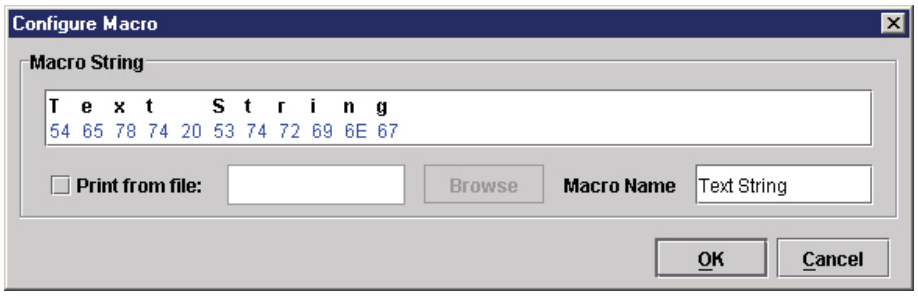



**Figure 127 The Macro String Field**

You can create a second kind of macro by typing in the Macro String field. The ASCII text appears above, and the hex code below. Use the up and down arrow keys to switch between ASCII text and hex code. Rename the macro in the Macro Name field. See Figure 127.

Click **OK** to finish configuring the macro.

The configured macros now appear in the list. See Figure 128.

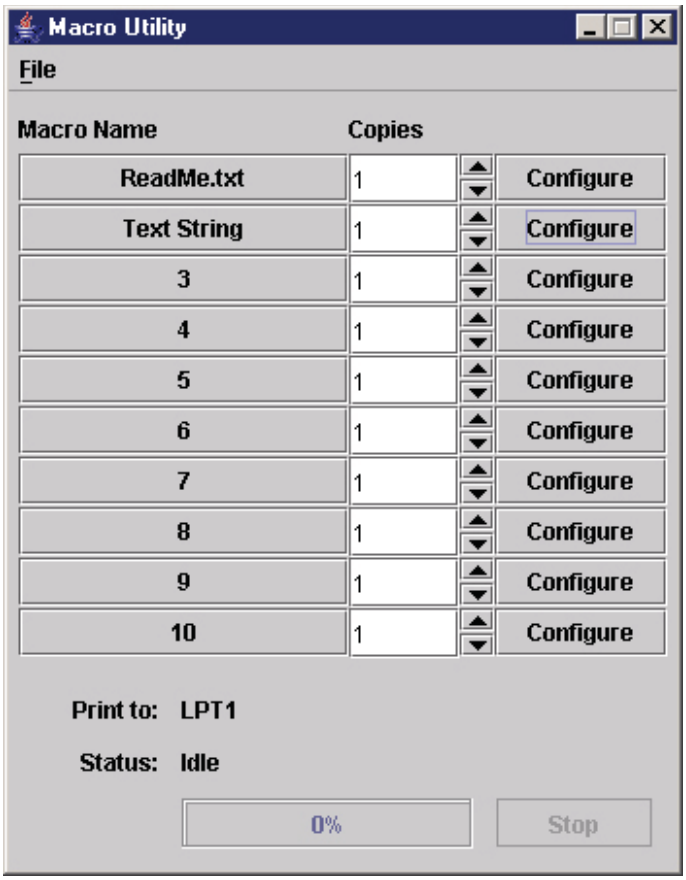



**Figure 128 Configured Macros**

Click the corresponding **Macro Name** button to send it to the printer. Adjust the number of copies in the **Copies** field.

# SNMP Browser

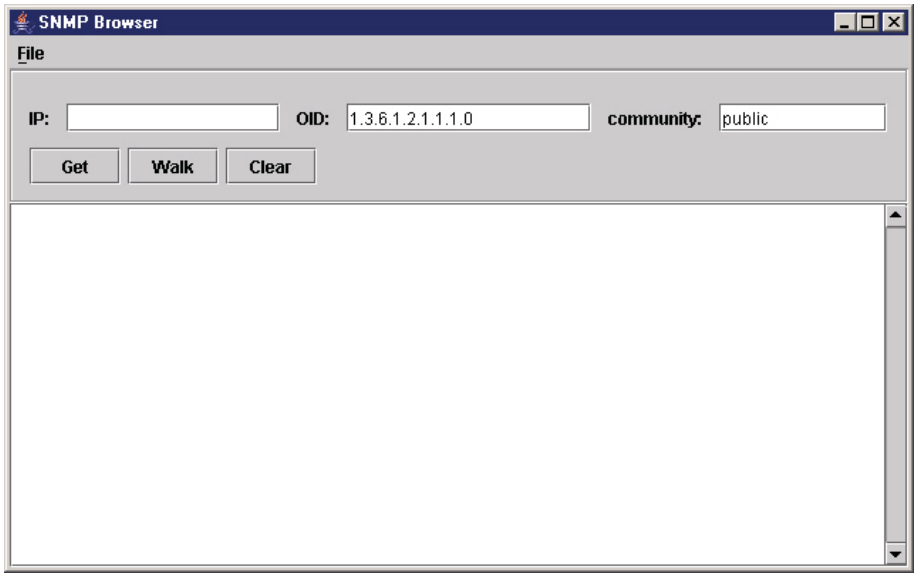



**Figure 129 SNMP Browser**

The SNMP Browser enables you to view attribute values in the Printer MIB managed by the NIC. You can retrieve an attribute value of a specific MIB Object ID (OID), or you can walk or traverse the MIB.

Three inputs are required before you can use the SNMP Browser:

1. **IP:** defines the IP address of the target printer.
2. **OID:** defines either the specific MIB object ID you want to view, or the starting location for the MIB walk.
3. **community:** defines the access community defined in the NIC. The default is public.

The **Get** button retrieves the attribute and attribute value for the specific OID entered. If the OID entered is invalid, you will receive the Error: SNMP error message.

The **Walk** button traverses the MIB starting with the OID entered. The display is in the format: OID=Attribute_Value.

The **Clear** button clears the current display.

The **File** menu allows you to open a previously saved SNMP Browser session, save the current session to file, or send the current session to a printer.

# Assign IP Address

**Figure 130 Assign IP Address**

Allows you to assign IP addresses remotely to NICs that have not been previously configured, or to reconfigure the NIC settings. See Figure 130.

**IMPORTANT** **This utility requires expert network knowledge. If you assign incorrect network parameters to the printer, then other devices on the network may operate improperly, possibly causing the whole network to be unusable.**

The Assign IP Address utility has five fields:

- **Broadcast Address:** To enter a subnet broadcast number or a direct IP address to find the printer.
- **Hardware Address:** To enter the Machine Access Code (MAC) on the NIC.
- **New IP Address:** To assign the printer its new IP address. Make sure this address is correct and do not enter an already existing IP address.
- **New Mask:** To enter the new mask address, if necessary. If you need the same mask, type the mask number.
- **New Gateway:** To enter the gateway number the new printer uses. Once you click **Assign**, the NIC settings change immediately.

**NOTE:** To view the new settings on the operator panel, reset the NIC (refer to the *Network Interface Card User's Manual*) or reboot the printer: set the power switch to O (Off), wait 15 seconds, then set the power switch to I (On).

# Enable Remote Printer Management

This sets the printer's diagnostic port to Ethernet, without having to navigate through the printer's operator panel.

It performs the following in the background:

1. Opens a command prompt session.
2. Executes a **`telnet`** command to the printer's IP address.
3. Logs in as **`root`**.
4. Executes the **`enable printermgr`** telnet command.
5. Closes the command prompt session.

**NOTE:** You must have Telnet root privileges to use this utility. See Telnet Root Password on page 58.

Select **Utilities ▶ Enable Remote Printer Management**, and the following dialog box opens:

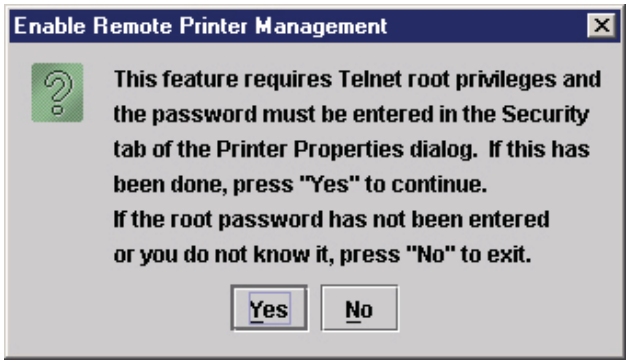



**Figure 131 Enable Remote Printer Management Dialog Box**

Click **Yes** to continue.

When remote printer management has been enabled, the following dialog box opens:

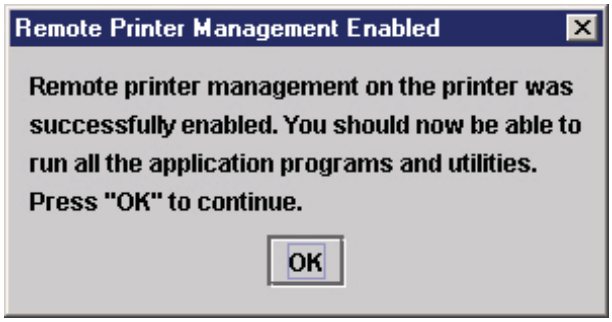



**Figure 132 Remote Printer Management Enabled**

If the following error message appears, then remote printer management has not been enabled.

**IMPORTANT** **You may need to set the correct root password. See Security Tab on page 58.**

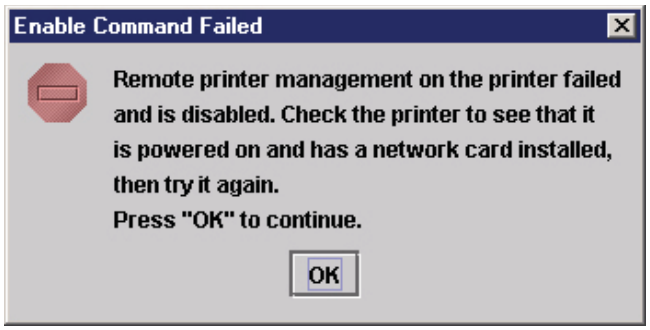



**Figure 133 Remote Printer Management Not Enabled**

# Lock/Unlock Menus

**Figure 134 Lock/Unlock Menus Dialog Box**

The Lock/Unlock Menus dialog box allows you to lock or unlock menus on a selected printer.

When you lock menus on a printer, the menu tree is disabled in the operator panel (physical and virtual). Any key that affects the menu tree such as **+**, **–**, ↑, ↓, ↵, UP, DOWN, NEXT, and PREV will not function. Also, any key that goes to a menu, e.g., the JOB SELECT or TEST PRINT key, will not function.

**NOTE:** When some of the above listed keys are used in combination with another to perform functions not related to the menu, they are not disabled.

Other keys not disabled are those that perform a function, e.g., PAUSE, FEED, ONLINE, PAPER ADVANCE, VIEW, SET TOF, PRT CONFIG, and PAGE EJECT.

# Configure Print Servers

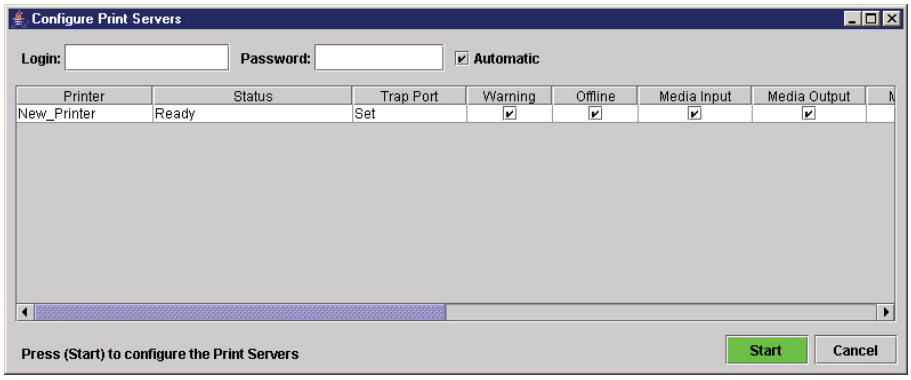



**Figure 135 Configure Print Servers Widow**

To access the Configure Print Servers application, select one or several printers from the printer database then select **Utilities ▶ Configure Print Servers** or click the **Configure Print Servers** button. The Configure Print Servers window appears (see Figure 135).

The Configure Print Servers application allows you to set the trap port according to the SNMP Trap Server setting (see page 29).

The Configure Print Servers application also allows you to select or deselect alert groups. To deselect an alert group, uncheck the check box(es) of the corresponding option(s). (By default all check boxes are checked.) The alert group options include:

- Warning
- Offline
- Media Input
- Media Output
- Media Path
- Marker
- Cutter
- Barcode
- RFID
- Scanner
- Intervention
- Consumable
- Label
- Power Cart

Click **Start** to configure the print servers.

**NOTE:** Check the **Automatic** check box to have PNE connect directly with the printer.

Uncheck the check box to have PNE make a Telnet connection with the printer. Enter **root** in the Login field and the password for the user **root** in the Password field.

When your printer encounters a problem that falls within the parameters of the selected alert options, the corresponding alert message appears. Refer to the Alert Groups Table in chapter three of the *Network Interface Card User's Manual* for descriptions of the alert message options.

**NOTE:** To check the print servers configuration, go to the NIC web page as discussed in chapter three of the *Network Interface Card User's Manual*.

# 5 Datastream Adapter

## Overview

The datastream adapter is a software filter tool that allows you to take data from an incoming datastream and replace the data with different data, insert new data at any location in the datastream, or flush out portions of the datastream. This is accomplished through Character Substitution Tables (CSTs) created by the CST Manager (page 136). See Figure 136.

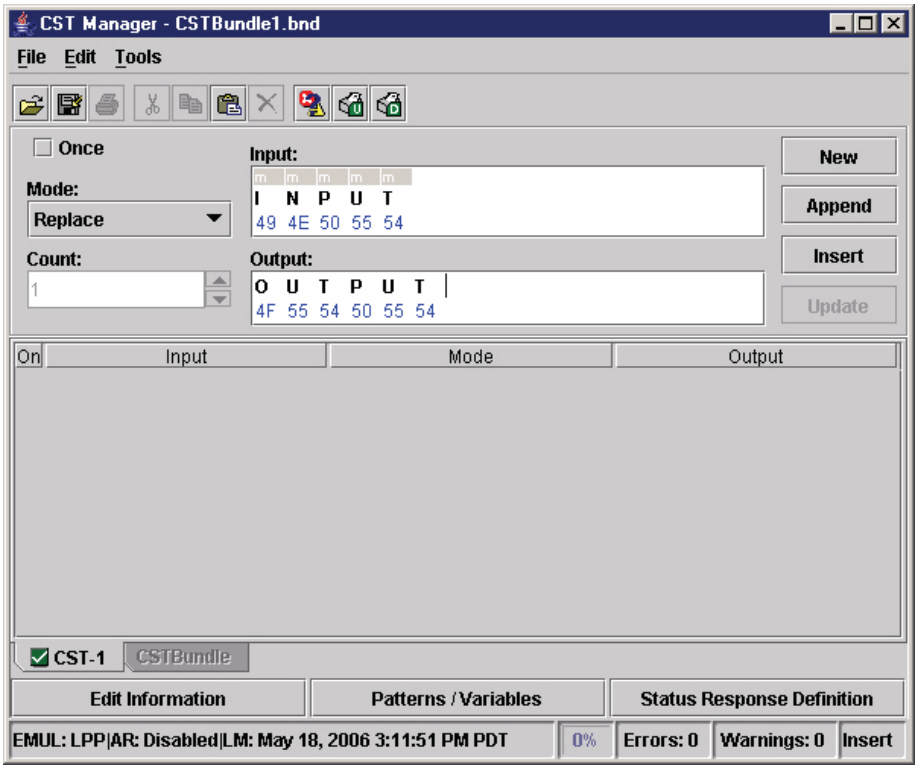



**Figure 136 Creating a CST to Download Into a Printer**

# CST Manager

Using the CST Manager, you decide which data, as sent by the host, gets modified by the printer.

Open PNE and select **Applications ▶ CST Manager** or click the (CST Manager) button to open the CST Manager window. See Figure 137.

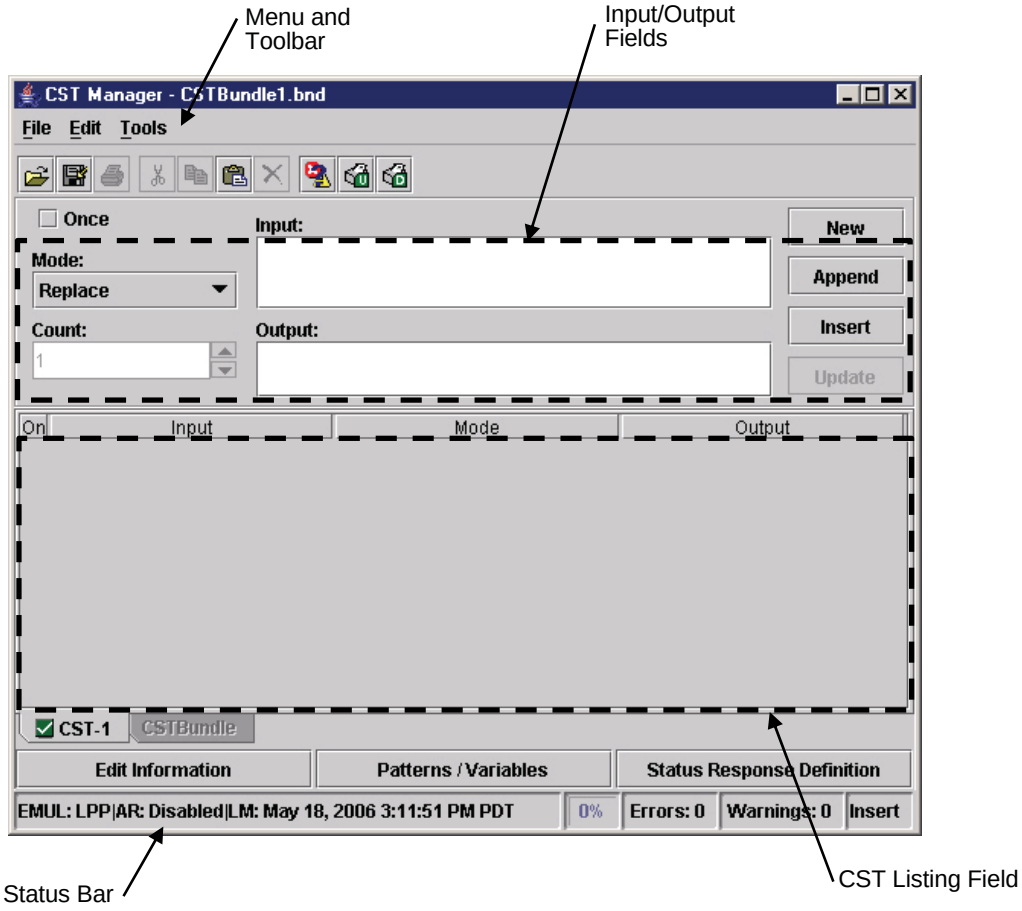
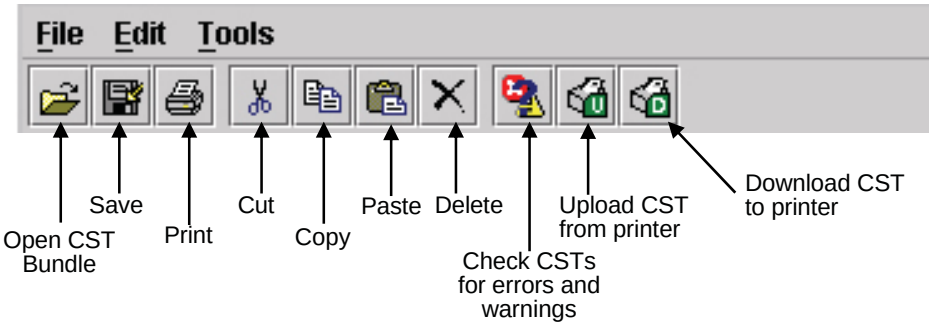



**Figure 137 CST Manager Window**

The CST Manager has a Toolbar, Input/Output fields, and a CST Listing Field.

## The Menu And Toolbar




### File

**New:** Closes the current bundle and creates a new one. See CSTs and CST Bundles on page 141.

**Open:** Opens a file dialog where you can select a CST bundle from a local disk. If the bundle has more than one CST, the first CST displays in the table.

**Reopen:** Displays the last eight opened CST bundles.

**Save:** Saves the current CST.

**Save As:** Similar to Save, except allows you to save the CST using a different location and name.

**Backup History:** Displays the backup history of a file. The system maintains the last 20 versions of a file.

**Properties:** Displays version information of a file.

**Set Password:** Sets the password for the current bundle.

**Print:** Prints selected CST entries.

**Quit:** Closes the CST.

### Edit

**Cut:** Moves the selected item to the paste buffer. The paste buffer holds only one item at a time. When you cut another item, the paste buffer updates.

Ctrl + X is the shortcut.

**Copy:** Copies the selected item to the paste buffer. Ctrl + C is the shortcut.

**Paste:** Copies the contents of the paste buffer to the selected area. Ctrl + V is the shortcut.

**Delete:** Deletes the current selection.

**Select All:** Selects all entries in the active CST.

**New CST:** Adds a new CST to the bundle. CSTs have default names, but you can change them. Names can have only 8 characters.

**Rename CST:** Renames the CST.

**Delete CST:** Deletes the current CST from the bundle.

**Import CST(s):** Imports CST(s) from a bundle file.

### Tools

#### Test

Tests the functionality of the active CST.

**NOTE:** The active CST is the CST currently selected/shown in the CST Manager window.

In the left (Input) pane of the Test dialog box, you can open and edit input files or create your own test files.

Click **Run**, and the active CST processes the input file and displays the results in the right (Output) pane.

Right-click in the Input or Output pane, and a View/Search pop-up menu appears. See Figure 138.

Available views are Normal (no control codes display), Dots (control codes display as dots), Mnemonics (control codes display as mnemonics, e.g., <LF>), and Hex (all characters display as a hex value).

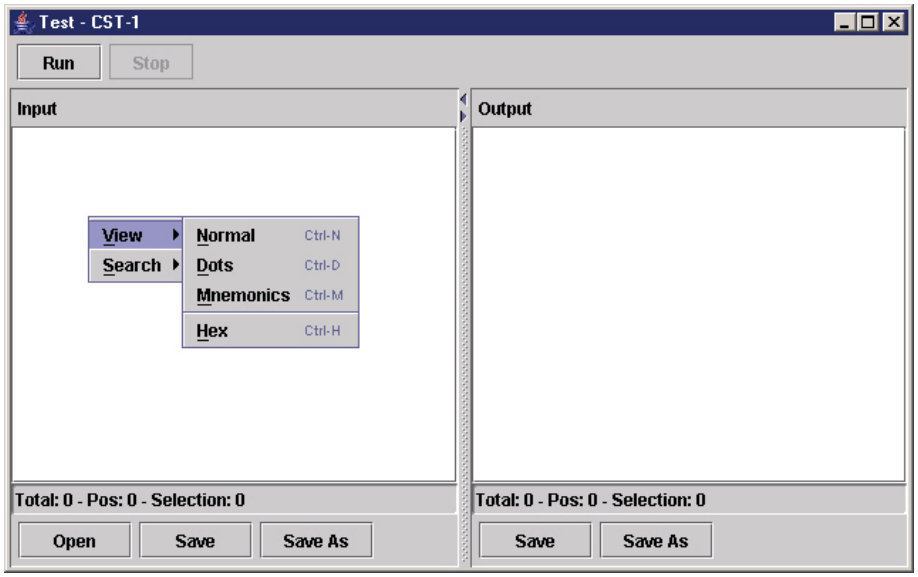



**Figure 138 The View/Search Pop-up Menu**

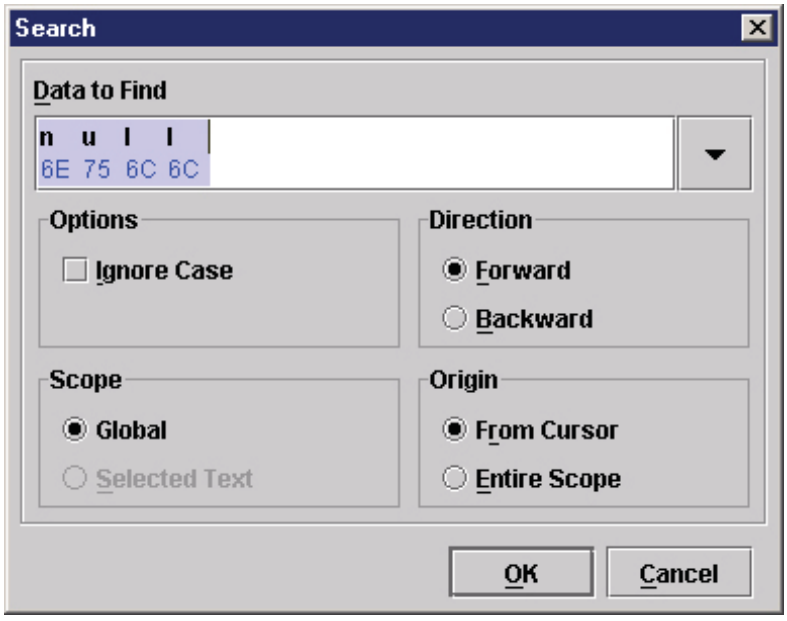



**Figure 139 Search Dialog Box**

Available searches are Find, Find Next, and Find Previous. If you select Find, a Search dialog box opens. See Figure 139.

**Upload**

Makes a connection to a printer from the printer database, then determines if the printer has a CST file. If so, it uploads the CST file into the CST manager. If the file is password protected, you will need to provide the password or the upload will cancel.

**Download**

Downloads the open CST file from the CST Manager to a printer. It makes a connection to a printer from the printer database, then determines if the printer has a CST file. If so, it warns you that the file will be overwritten if you proceed.

You must enable the CST option in the printer before you can use it. To enable the CST:

1. Open PNE.
2. Select Applications ▶ CST Manager.
3. In the Input field, type **`INPUT`**.
4. In the Output field, type **`OUTPUT`**. See Figure 136.
5. Select File ▶ Save As.
6. Name the CST something simple such as **CST-1**, **CST-2**, etc.
7. In PNE, select a printer.
8. In the CST Manager, select **Tools ▶ Download** to download your saved CST to the printer.
9. In PNE, select Applications ▶ Operator Panel.
10. Take the printer offline.
11. Select **PRINTER CONTROL ▶ Applic. Adapter** if you have a thermal printer, or select **MAINT / MISC ▶ Applic. Adapter** if you have a line matrix printer.
12. Change the setting from **Disable** to the name of the CST you downloaded (such as **CST-1**, **CST-2**, etc.). Your CST is now enabled.

**NOTE:** To maximize the performance of a CST, you need to save it in a Configuration file. See Configuration Editor on page 65.

**Validate Bundle**

Checks CSTs for syntax errors and missing information such as “Start Flush” commands that have no corresponding “End Flush” command. Errors display in red. Warnings display in yellow.

You cannot execute CSTs with errors, but you can execute CSTs with warnings.

**Options**

Specifies options that apply to the CST. Includes the following check boxes:

- Use Last Selected Upload Printer
- Use Last Selected Download Printer

## Input/Output Fields

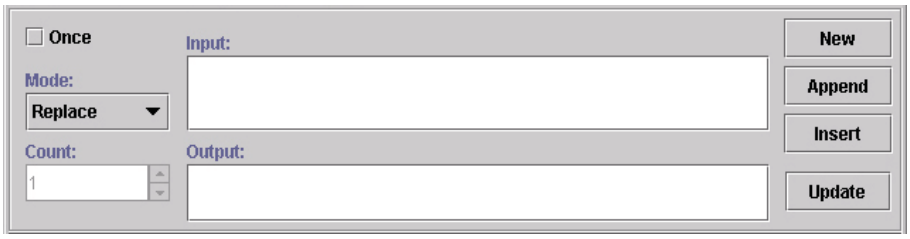



**Figure 140 CST Input/Output Fields**

These fields allow you to select the appropriate Input/Output sequence.
Use Shift + Alt + i and Shift + Alt + o to switch between the Input and Output fields.

See Modes And Attributes on page 141 for the different Mode selections.

Use the four buttons on the right with the Input/Output fields.

**New:** Clears the Input and Output fields.

**Append:** Enters the Input and Output fields at the end of the current CST.

**Insert:** Enters the Input and Output fields before the selected entry in the CST.

**Update:** Re-enters the Input and Output fields into the current CST after editing.

### Input Field

The Input Field displays the Input string the datastream adapter looks for. Enter Input strings in one of two ways: as an ASCII character or as a hex value. You can switch between the two entry modes by using the up and down arrow keys. To select attributes, place the mouse over a character and right-click. Available attributes display (see Modes And Attributes on page 141).

### Output Field

Use the Output Field to specify what the datastream adapter does when the incoming data matches the data and conditions specified in the Input Field. Specify data if performing a Replace, or specify the name of a CST if performing a CST Select.

**NOTE:** Attributes are not available in the Output field.

## The CST Listing Field

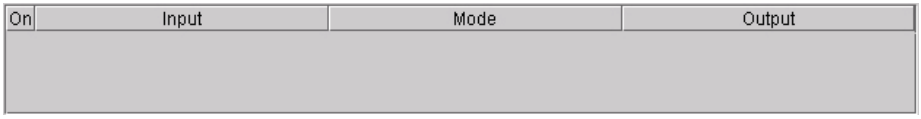



**Figure 141 CST Listing Field**

The field below the input and output fields shows the CST. To copy an entry, click it and press Ctrl + C or use the copy button on the toolbar. To move an entry up or down, click it and press Ctrl + up arrow or Ctrl + down arrow.

You can also click and drag an entry to a new position. Double-click an entry to place its data in the Input/Output fields. The area at the bottom of the dialog box lists statistical data about the use of CSTs, the available space, and the selected edit mode.

### CSTs and CST Bundles

A CST contains all information necessary to perform an application adaptation. The CST size is limited to avoid complex adaptations that may affect printer performance, and to reduce printer memory usage. If a CST exceeds the size limit, an error message displays. The working space for a CST is approximately eight kilobytes.

CSTs are stored in a CST bundle. Each CST bundle can hold up to 64 CSTs. You can name and store as many CST bundles as the storage device allows.

You can define up to 8 different configurations, and each configuration can have a CST connected to it. Each configuration can have one CST, or one CST can apply to multiple or all configurations. When you download a CST bundle to the printer, the CSTs are available to the datastream adapter. You can then configure the printer to select the correct CST for your applications.

**NOTE:** Only one configuration and CST bundle can be active at a time.

### Status Bar

The status bar, located at the bottom of the CST Manager window, displays the following items (in order):

- Status info:
    - EMUL: the emulation for which the CST is active.
    - AR: indicates if Enable Auto Reset is checked in the Edit Information dialog box. See Enable Auto Reset on page 147.
    - LM: date and time this CST was last modified.

A percentage bar which shows the total space used in the active CST.

Error count of the CST bundle.

Warning count of the CST bundle.

Edit mode: Insert over overwrite.

# Modes And Attributes

## Modes

Fourteen modes handle data: Replace, Remove, Insert, Flush, Transparent, Skip GFX Data, Select CST, CST ON, CST OFF, Reset, Response, PAA Event, Store, and Reset All Variables. Each mode allows certain attributes to apply to the characters of the datastream.

#### Common Attributes

All modes have four attributes in common: Match, Don’t Care, Don’t Care Except, and Ignore Case. Also, if at least one Pattern is defined, all modes have the Insert Pattern attribute. And, if at least one Variable is defined, all modes (except Store) have the Insert Variable attribute.

You can use these in combination (Or) with other attributes available in the selected mode. Some modes can use extra attributes. See page 144 for attribute information.

#### Replace Mode

The Replace mode replaces part of one datastream with another.

The extra attribute for Replace is Parameter.

#### Remove Mode

The Remove mode removes data from the datastream. For example, the CST can remove all occurrences of **”** (quotation mark) from the text that is sent to an Epson FX-1050 emulating printer.

No extra attributes exist for Remove.

**NOTE:** When using the Don't Care Except attribute, the Input string is removed from the datastream except when the Don't Care Except condition matches.

### Insert Mode

The Insert mode inserts data in the datastream.

The extra attributes for Insert are Before and After (to specify the insertion point).

### Flush Mode

The Flush mode is a combination of the Remove and Replace mode. It removes longer parts of datastreams without you needing to type in every character of that datastream, and replaces the removed data with new data.

The extra attributes for Flush are Start, End, and Count.

### Transparent Mode

The Transparent mode allows you to control which data is removed, replaced, or modified. Sometimes the datastream of a graphics file contains a character sequence that is specified in the active CST for removal. If you mishandle this graphics file, important data could be removed.

The extra attributes for Transparent are Start, End, and Count.

### Skip GFX Mode

The Skip GFX mode allows the Bit Image Graphics command to be recognized and the following data to become transparent which prevents the datastream adapter from removing selected strings from graphics. This allows graphic code to print properly.

The extra attributes for Skip GFX are 8-pin graphic data, 16-pin graphic data, 24-pin graphic data, and Graphic plot data.

### Select CST Mode

The Select CST mode allows you to switch CSTs immediately. Use it if different conversions are required (one per job). You do not need to select the matching CST through the printer front panel.

This mode needs a unique header for each of the jobs requiring a CST to activate. Once a switch occurs, the datastream adapter resets, selects the indicated CST, and restarts.

**NOTE:** Buffered data (the portion of the incoming datastream that invokes the Select CST mode) is not deleted; it is rescanned using the new CST.

No extra attributes exist for Select CST.

### CST On, CST Off Mode

These modes prevent data handling by CSTs until enabled by part of the incoming datastream.

No extra attributes exist for CST On and CST Off.

### Reset Mode

The Reset mode is used to reset the CST such that, if the Use Once flag has been set for one or more entries in the table, these entries become available again for the next datastream. See The Use Once Flag on page 146.

No extra attributes exist for Reset.

### Response Mode

This feature was added to the datastream adapter to allow the definition of a protocol: an interaction between the host computer and the printer that allows the host computer to determine status details of

the printer. This allows you to be certain that a job (or label, or form) is completely printed before the next job is sent.

The Status Response definition feature allows the user to specify what input string will be used by the host computer to request a status report from the printer. It also allows the actual response to be defined, and the connection of a certain printer status as a condition to this response.

The extra attribute for Response is Flush.

### PAA Event Mode

In the PAA Event mode, when the defined character sequence in the Input field is found, an event is generated that can be handled by the GPIO. The event generated is determined by the Event ID value. Up to 65,535 different events can be identified using the Event ID parameter.

The extra attribute for PAA Event is Flush.

### Store Mode

The Store mode is used to store information from the host data so it can be used by other modes that allow variables in the Output field. It requires exactly one variable to be set in the OCS field. As a result this mode can only be selected if one or more variables are defined.

Right-click the Output field and a pop-up menu appears with the available variables. See Figure 142. All characters in the Input field that have the Include attribute selected (see Attributes on page 144) are copied into the selected variable. By default, all characters typed or copied into the Input field have the Include attribute selected. The entry can only be added to the active table if a variable has been set. If you select the wrong variable, the variable in the Output field needs to be removed first before another variable can be selected.

The extra attributes for Store are Flush and Include.

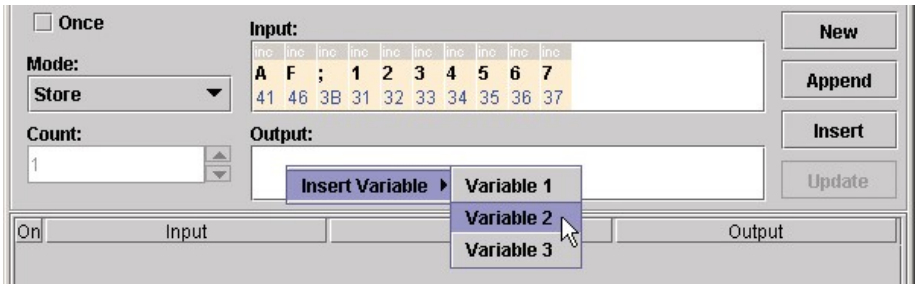



**Figure 142 Available Output Variables for Store Mode**

### Reset All Variables Mode

The Reset All Variables mode resets and clears all defined variables.

No extra attributes exist for Reset All Variables.

## Attributes

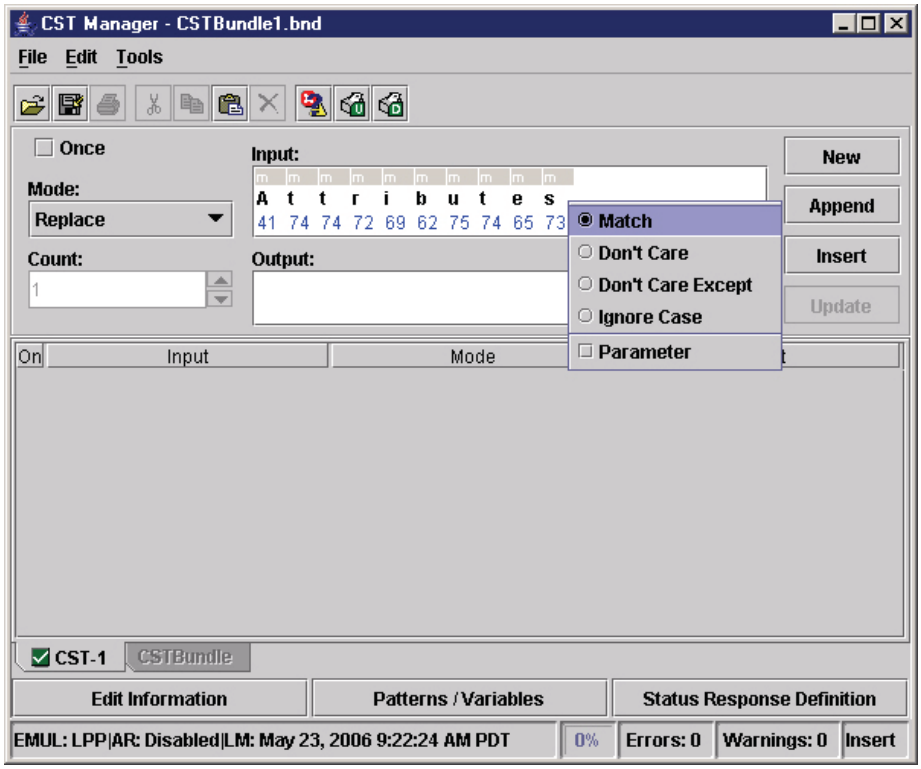



**Figure 143 CST: Accessing Attributes**

To access attributes, right-click any item in the Input field (or select multiple items and right-click). Different attributes are available depending on what mode is selected (see Modes on page 141). In the above example, the “s” in “Attributes” was right-clicked while in Replace mode. See Figure 143.

These are the different attributes used by the various modes and their descriptions:

### Match

The most common and simplest Attribute. If the specified character(s) match the datastream, then a replacement occurs if in Replace mode. It is the default setting.

### Don’t Care

Allows certain characters in the datastream to be wild cards; that is, it does not matter what character it is. If the others match, then the replacement occurs if in Replace mode.

### Don’t Care Except

Allows characters in the datastream to be wild cards, but only if they do not match the character specified.

### Ignore Case

Allows the matching of characters to be case independent. Whether the character is “X” or “x” a match occurs.

**Parameter**

Allows characters in the incoming datastream to have a “label.” You can use this label in the outgoing datastream to move characters to other locations without changing them. If the outgoing datastream has no label specified, then the character is removed from the incoming datastream.

**Before/After**

Specifies where the data is inserted.

**Start/End**

Starts and stops data flushing (activates and deactivates the datastream adapter). Any data in the Output field passes to the printer instead of being flushed.

**Count**

Specifies a fixed number of characters that are flushed following the Count attribute (deactivates the datastream adapter). The fixed number is specified in the Count field.

**Flush**

Removes the input string from the datastream, preventing it from being printed.

**Include**

Specifies that the character that has the attribute will be included in the Store mode operation.

**Insert Pattern**

Allows a defined pattern to be inserted in the CST. See Patterns / Variables on page 148.

**Insert Variable**

Allows a defined variable to be inserted in the CST. See Patterns / Variables on page 148.

# Additional Features

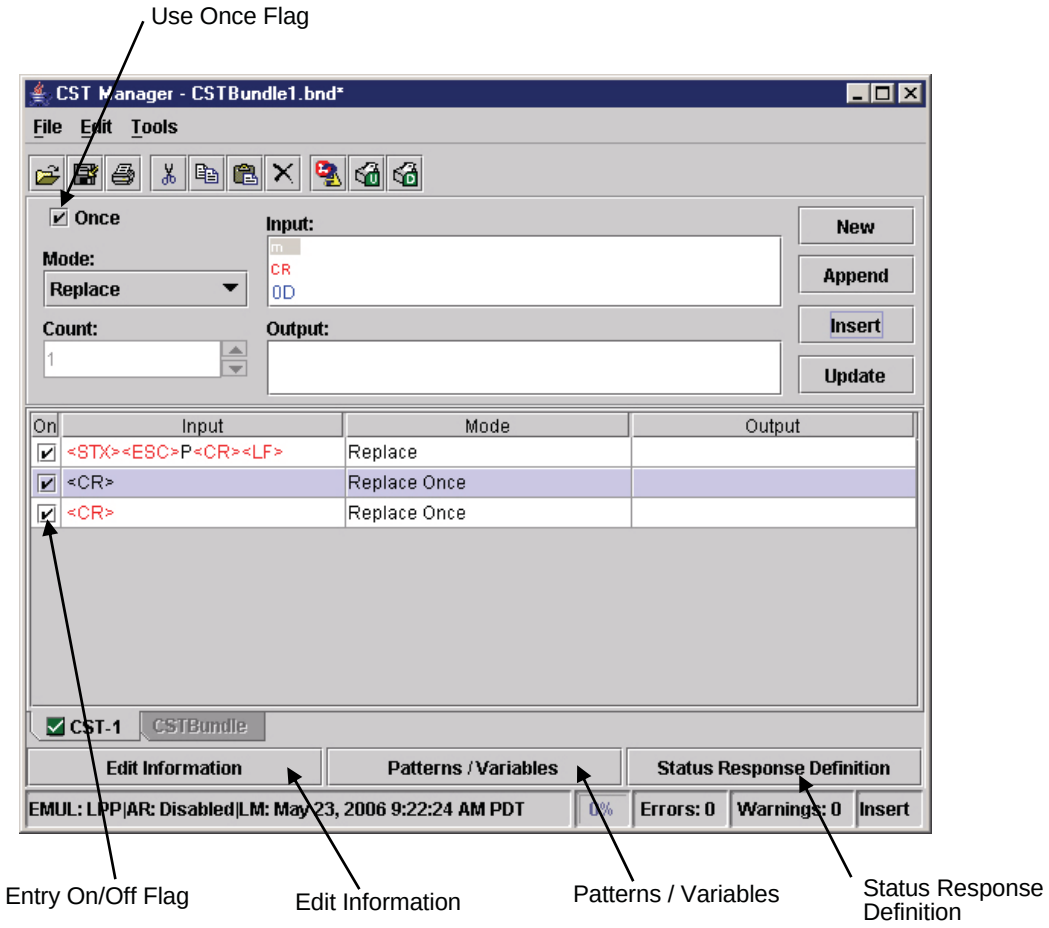



**Figure 144 Additional Features**

## The Use Once Flag

This flag, which is set during the entry of a CST, is used when it is impossible to create entries in the table that are unique enough to allow for different outputs according to each of the entries. This might be the case when data extraction is done and the printable data is always preceded or followed by the same character (or sequences).

**NOTE:** A positive note in using this flag is that as more CST entries get marked as “used,” the less entries need to be checked by the datastream adapter and the faster the conversion takes place. Even if you do not need the flag to compensate for a lack of uniqueness in the incoming data, setting the flag for entries that will occur only once improves the throughput of the datastream adapter.

When the end of the CST has been reached, the used flags will need to be reset so that this CST can be applied to the next datastream.

To reset the used flags:

- Append the Reset mode to the CST.
- Check the Enable Auto Reset check box in the Edit Information dialog box. See Edit Information on page 147.

**NOTE:** The only difference between the two methods is that the Reset mode can be placed anywhere in the CST. The Enable Auto Reset flag takes effect only when the end of the CST has been reached.

### The Entry On/Off Flag

This flag is used to temporarily enable/disable entries in the CST. It can be used for testing purposes and for diagnosing large CSTs. The default for this flag is On.

# Edit Information

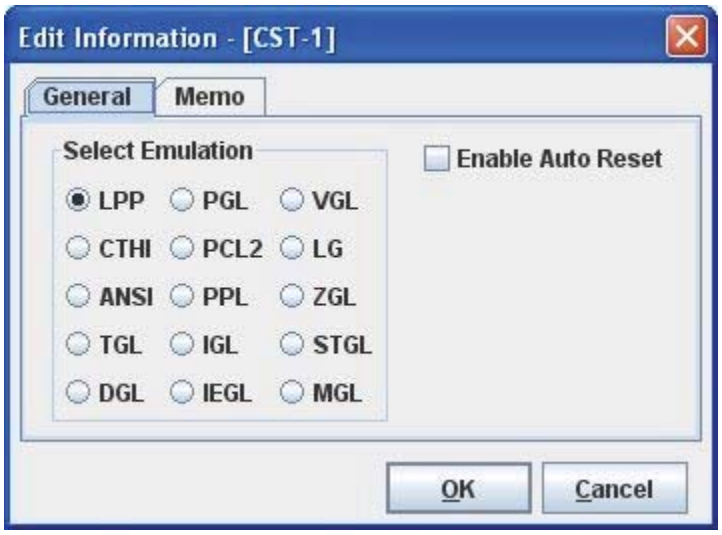



**Figure 145 Edit Information Dialog Box**

Click **Edit Information**, and the Edit Information dialog box opens.

### General Tab

**Select Emulation:** Allows you to select the emulation that is active for the CST. Even though the printer can store many emulations, only one can be active for the CST. LPP is the default emulation.

**Enable Auto Reset:** When checked, all entries that have the Once option checked are automatically reset in the CST so that this CST can be applied to the next datastream. The entries are reset only when the end of the CST has been reached.

### Memo Tab

Use the Memo tab to save comments with the CST (e.g., comments that describe the CST function and purpose).

# Patterns / Variables

Click **Patterns / Variables**, and the Object Definition dialog box opens.

This dialog box is divided into the following tabs: Pattern Character, Pattern, Formatted Pattern, and Variable. When you click OK, the defined set of patterns, pattern characters, formatted patterns, and variables will be available for use by the current bundle.

**IMPORTANT** **You must add defined objects to their associated lists, or they will be lost when you close the Object Definition dialog box.**

## Pattern Character Tab

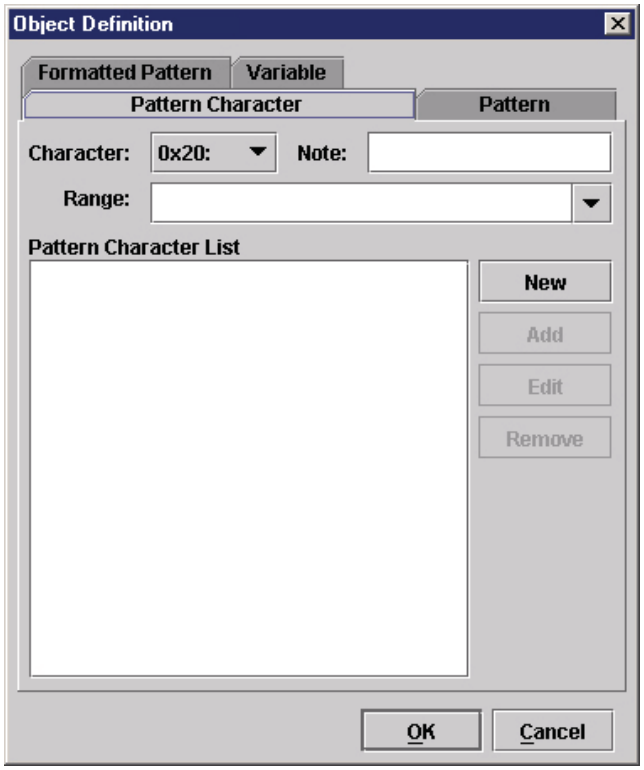



**Figure 146 Patterns Character Tab**

Use the Pattern Character tab to add, remove, and edit new and existing pattern characters. A pattern character can be used by the datastream adapter to check host data against a range of values.

**Character:** Selects the character that identifies the pattern character. The available values range from 0x20 to 0xFF. The values 0x00 to 0x1F are reserved. The values are listed with their hex value and printable character. If you select a character already defined in the drop-down list, the properties for the character will display in the Note and Range fields. You can change the data and click **Update** to update the definition in the Pattern Character List.

**NOTE:** A short note, description, or name of the pattern character. This will appear in pop-up menus where you insert and use pattern characters.

**Range:** The range of values datastream adapter checks against.

**NOTE:** A continuous interval is separated by two dots, e.g., **a..z**.

Enter hex values with the prefix **0x**. To define a continues hex interval, enter **0xNN..0xNN** (where NN is a value ranging from 00 to FF).

You can define multiple intervals per pattern character by separating the intervals with a **,** (comma) or a space character.

**NOTE:** To include an interval separator, enter them either as hex, e.g., **0x20** and **0x2C**, or make it part of a continues interval, e.g., **0x10..0x30**.

**Default Pattern Characters**

You can select a set of default pattern characters by using the Range drop- down list. The Character and Note fields of the default pattern characters are set to the values listed in Table 8. If you choose a default pattern and the identifier (character) is already in use, the first unused identifier from the Character drop-down list is used.

**Table 8 Default Pattern Characters**

| Range | Identifier (Character) | Note |
|---|---|---|
| 0..9 | # | Numerals |
| A..Z | U | Uppercase |
| a..z | L | Lowercase |
| A..Z, a..z | A | Alpha |
| 0..9, A..Z, a..z | @ | Alpha Numeric |
| 0..9, A..F, a..f | H | Hex Values |
| 0x00..0x1F | C | Ctrl-Codes |
| 0x20..0x7F | P | Printables |
| 0x80..0xFF | S | Upper Set |

**Pattern Character List**

Lists all the patterns characters that you have defined and added to the list.

**New:** Click **New** to reset the Range and Note fields. The first unused identifier from the Character drop-down list is chosen.

**Add:** If the displayed text on the second button is Add, the pattern character (with chosen identifier) has not been added to the Pattern Character List. Click **Add** to add the defined pattern character to the end of the Pattern Character List.

**Update:** If the displayed text on the second button is Update, the pattern character (with chosen identifier) is already in the Pattern Character List. Click **Update** to update the pattern character properties with the new properties.

**Edit:** Select an item in the Pattern Character List, and click **Edit** to edit it.

**NOTE:** If you select more than one item, you can only to edit the first item.

**Remove:** Select one or more items in the Pattern Character List, and click **Remove** to remove them from the list.

**IMPORTANT** **Removing pattern characters invalidates entries that use the pattern characters.**

## Pattern Tab

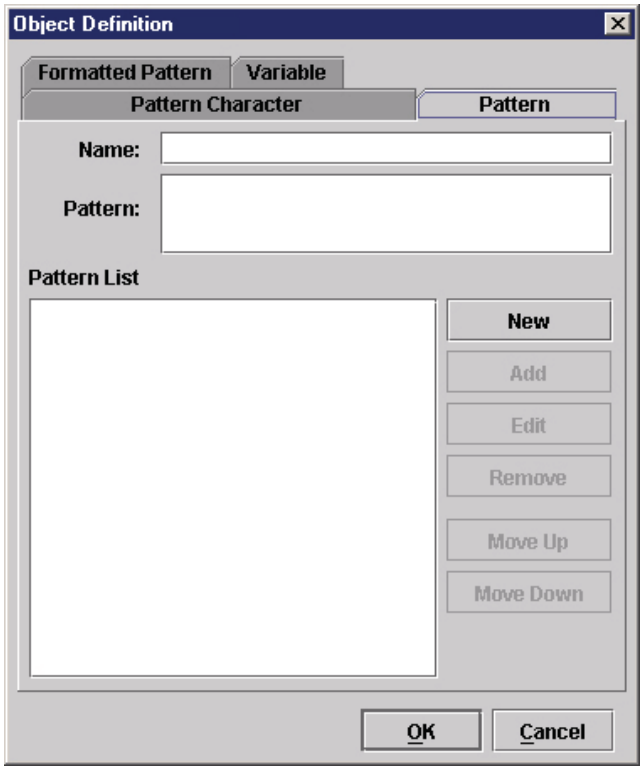



**Figure 147 Pattern Tab**

Use the Pattern tab to add, remove, and edit new and existing patterns.

**Name:** The name of the pattern. The name must be unique for this type of datastream adapter object. This name appears in pop-up menus when you insert and use patterns.

**Pattern:** To enter the pattern in a way similar to defining the input of a CST entry (see Input Field on page 140). If you type a character that is defined as a pattern character (see Pattern Character Tab on page 148), the default attribute will be Pattern Character: it will display over a light green background with the mnemonic **pch**. To use the character as a literal, right-click the character and select the **Match** attribute.

### Pattern List

Lists all the patterns you have defined and added to the list.

**New:** Click **New** to clear the Name and Pattern fields and create a new pattern. Use a unique and descriptive name. This name appears in pop-up menus when you insert a pattern.

**Add:** If the displayed text on the second button is Add, the defined pattern has not been added to the Pattern List. Click **Add** to add the pattern definition to the end of the Pattern List. The pattern appears in the list with its name followed by a separator and the pattern.

**NOTE:** If the pattern contains control codes, they will display in red. Other non-printable characters will display as red dots.

**Update:** If the displayed text on the second button is Update, the defined pattern is already in the Pattern List. Click **Update** to update the pattern properties with the new properties.

**Edit:** Select an item in the Pattern List, and click **Edit** to edit it.

**NOTE:** If you select more than one item, you can only to edit the first item.

**Remove:** Select one or more items in the Pattern List, and click **Remove** to remove them from the list.

**IMPORTANT** **Removing patterns invalidates entries that use the patterns.**

**Move Up/Move Down:** Patterns appear in pop-up menus in the order that they appear in the Pattern List. Select an item in the Pattern List, and click **Move Up** or **Move Down** to move the pattern up or down on the list.

## Formatted Pattern Tab

Use the Formatted Pattern tab to add, remove, and edit new and existing formatted patterns. You can use a formatted pattern to identify host data patterns that do not have a fixed length.

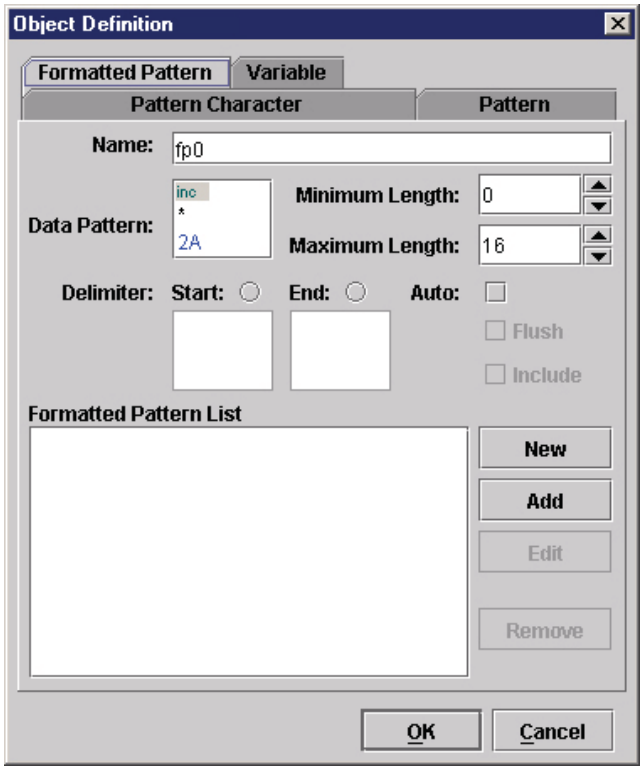



**Figure 148 Formatted Pattern Tab**

**Name:** The name of the formatted pattern. The name must be unique for this type of datastream adapter object. This name appears in pop-up menus when you insert and use formatted patterns.

**Data Pattern:** To insert a single character that is used as the data pattern. This may either be a pattern character or any other character with the default Don't Care attribute. The default for this field is * (asterisk) with the Don't Care and Include attributes.

Right-click the character and the following pop-up menu appears:

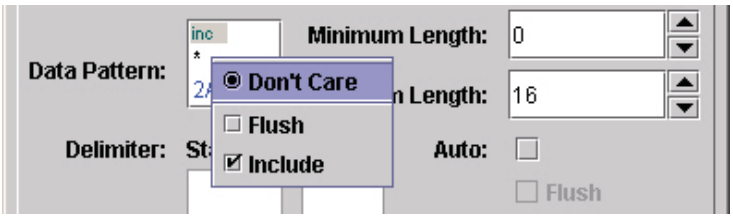



**Figure 149 Data Pattern Pop-up Menu**

If you use a data pattern character that is not defined as a pattern character, the Don't Care attribute is always selected. Use the Flush attribute to flush the found data from the host data. Use the Include attribute include the found data in Store operations. The Include attribute is selected by default.

If you use a data pattern character that is defined as a pattern character, the Pattern Character attribute will be selected by default, and the background of the **inc** mnemonic will be light green. To change it to a wild card character, right-click the character. The attribute pop-up menu appears. See Figure 150.

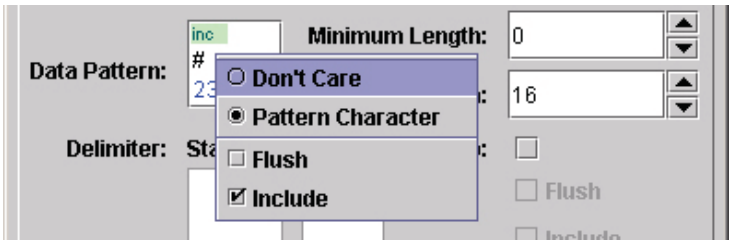



**Figure 150 Pattern Character Pop-up**

The Pattern Character attribute is selected by default. To use the data pattern character as a wildcard, select the **Don't Care** attribute.

**Minimum Length:** Defines the minimum length the pattern must have. If the data pattern is set to scan for numerals using a pattern character, it must find at least *n* numerals (the value set by this property) before a match is considered.

**Maximum Length:** Defines the maximum length the pattern may have. If the data pattern is set to scan for numerals using a pattern character, it only scans for a maximum of *n* numerals (the value set by this property) before a match is made.

### Delimiter

Use delimiters to find data easier. You can look only for a start delimiter, end delimiter, start and end delimiters, or auto delimiter.

**Start:** When you enable Start, a pattern match occurs only when the Start character is found. The Start character may be a single character or a pattern character, and it has the Flush and Include attributes.

**End:** When you enable End, a pattern match occurs only if the End character is found at the end of the data pattern and the maximum length is not exceeded. The End character may either be a single character or a pattern character, and it has the Flush and Include attributes.

**Auto:** When you check the Auto check box, the pattern considers the first character found to be the start and end delimiter. See the following example.

**NOTE:** In the following example, items enclosed in <> indicate datastream adapter objects like Pattern, Pattern Character, etc. Random host data is indicated by "...." preceding and/or following the sample data.

**Auto Example:**

Pattern Character
- Identifier: #
- Range: 0..9
- Note: Numerals

Formatted Pattern
- Name: fpFieldData
- Data Pattern: <#>
- Min: 0
- Max: 5
- Delimiter: Auto

Entry 1
- Input: AF;< fpFieldData >
- Mode: Remove
- Output: N/A

Test Case 1
- Host data: ….AF;"12345"….
- Result: Match for Entry 1
- Reason: As delimiter is set to auto the first quote is seen as the start and end delimiter.

Test Case 2
- Host data: ….AF;"123456"….
- Result: No Match
- Reason: Max length exceeded.

Test Case 3
- Host data: ….AF;"01234"….
- Result: No Match
- Reason: No Matching end delimiter.

**Formatted Pattern List**

Lists all the formatted patterns that you have defined and added to the list.

**New:** Click **New** to reset all data fields.

**Add:** If the displayed text on the second button is Add, the formatted pattern has not been added to the Formatted Pattern List. Click **Add** to add the defined formatted pattern to the end of the Formatted Pattern List.

**Update:** If the displayed text on the second button is Update, the formatted pattern is already in the Formatted Pattern List. Click **Update** to update the formatted pattern properties with the new properties.

**Edit:** Select an item in the Formatted Pattern List, and click **Edit** to edit it.

**NOTE:** If you select more than one item, you can only to edit the first item.

**Remove:** Select one or more items in the Formatted Pattern List, and click **Remove** to remove them from the list.

**IMPORTANT** **Removing formatted patterns invalidates entries that use the formatted patterns.**

## How to Use Patterns

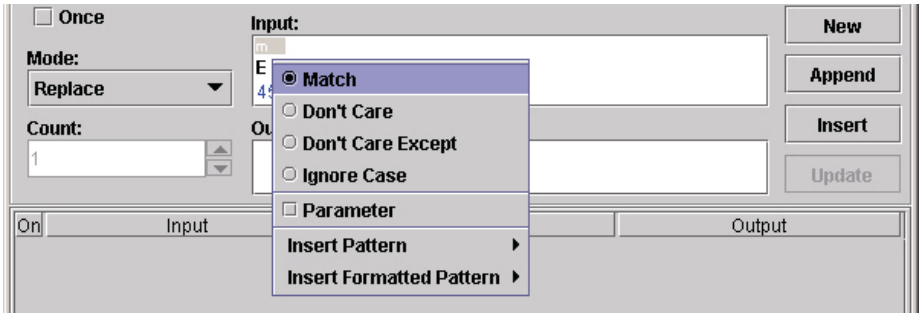



**Figure 151 Inserting Patterns in the Input Field**

Once you define the patterns you can use them in CST entries. To insert a pattern, right-click a character from the input string. Insert Pattern and/or Insert Formatted Pattern displays at the bottom of the pop-up menu. See Figure 151.

Use these menus to insert your pattern or formatted pattern. The pattern will be inserted before the character. To append a pattern, right-click past the end of the Input string.

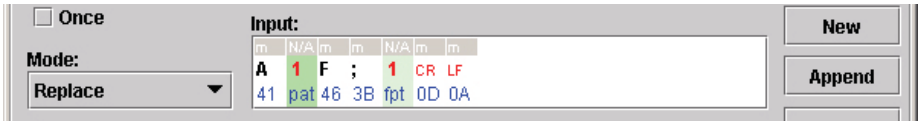



**Figure 152 Inserted Patterns**

A pattern has an index number in red on a light green background with the mnemonic **pat** below the index number. A formatted pattern uses the mnemonic **fpt**. See Figure 152.

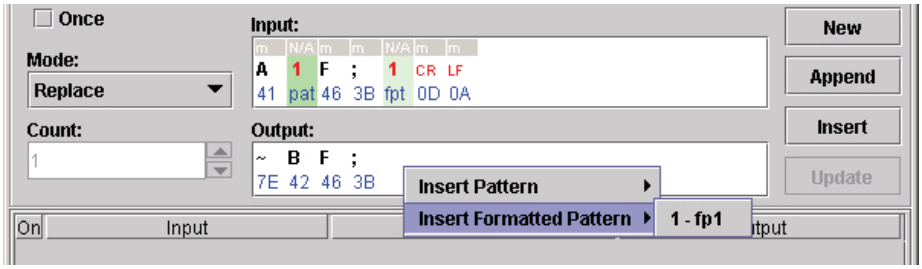



**Figure 153 Inserting Patterns in the Output Field**

The same formatted pattern may be used more then once in the Input field. When you want data found by the pattern to be copied to the Output field, use the index number (in red) to identify the data. To add a pattern to the Output field, use the same procedure as for the Input field. The Insert Pattern and Insert Formatted Pattern menus list all patterns used in the Input field with the index number in front of the pattern name. See Figure 153.

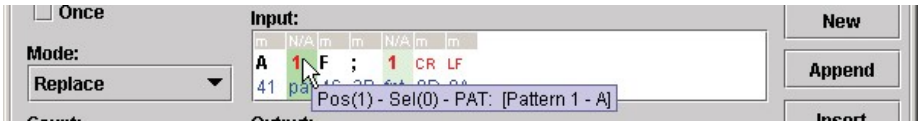



**Figure 154 Pattern Screen Tip**

To see pattern details, i.e., name and definition, hover the pointer over the character in the Input field to display a screen tip. See Figure 154.

**NOTE:** For some Modes, you cannot insert patterns into the Output field.

## Pattern Recognition Example

Normally, the CST only allows you to do an absolute match on a character. It has not been possible to check if a character is within a given range of characters (unless you write a very complicated CST).

Pattern recognition allows the user to specify either a range of characters or a specific pattern with a unique name that can be used to test the input data against.

### Example

The following command sets the label size for thermal printer 1:

<ESC>Daaaa,bbbb,cccc<LF><NULL>

where *aaaa* is the length of the label, *bbbb* is the effective print width and *cccc* is the effective print length.

**NOTE:** *aaaa*, *bbbb*, and *cccc* are always fixed at 4 digits with a value range of 0000 to 9999.

Convert this command (assuming the units are the same) into the PGL PAPER command for thermal printer 2.

Start with a CST that will translate the <ESC>D into PAPER. Skip the value of *aaaa* since thermal printer 2 can detect the forms length using the CALIBRATE function. The value of *bbbb* will be used in combination with the WIDTH function, and the value of *cccc* in combination with the LENGTH function. This results in the following translation:

Thermal printer 1: <ESC>Daaaa,bbbb,cccc<LF><NULL>

Thermal printer 2: PAPER;CALIBRATE;LENGTH cccc;WIDTH bbbb<CR><LF>

To be able to copy the value of *bbbb* into the WIDTH function and the value of *cccc* into the LENGTH function, label these values and specify their ranges to be from 0000 to 9999.

To do this, use the Object Definition capability of the datastream adapter.

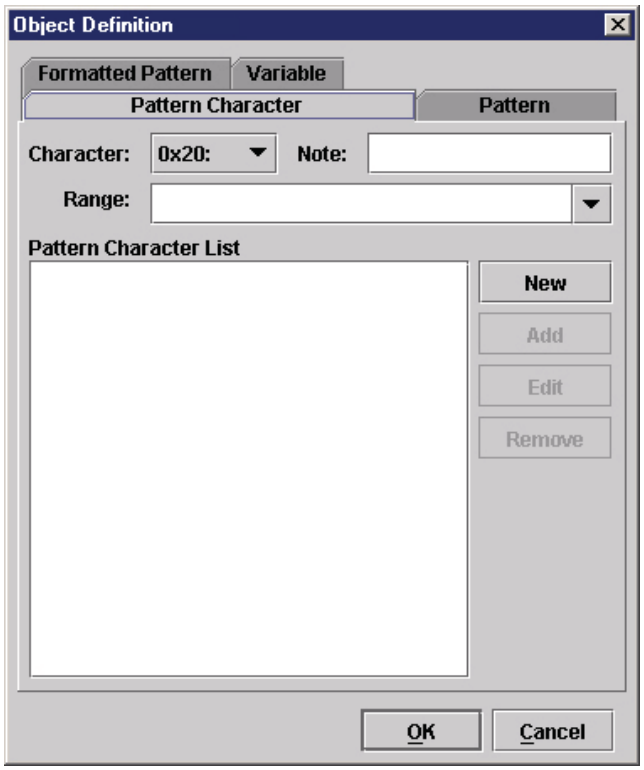



**Figure 155 Object Definition: Pattern Character**

1. In the CST Manager, click **Patterns / Variables**. See Figure 155.

Next, define the required pattern character by selecting it from the list of available characters.

2. Click the **Character** down arrow and select **0x23:** #. The # character will be used as a label.

**NOTE:** The total number of different pattern characters that can be selected is 224.

3. If necessary, enter a note to go with this label in the Note field. For example, use Length if the Pattern Character is going to be used for the Length value of the command to translate.
4. Type **`0..9`** in the **Range** field. This is the range of values this label can have.

**NOTE:** A range is specified using two periods in sequence, i.e., 0..9 or A..Z. A comma should be used as a delimiter if more than a single range or value is specified for a pattern character, i.e., A..Z,0..9 if the range should cover both uppercase alpha and numeric values.

Use the Range down arrow to select pre-defined ranges.

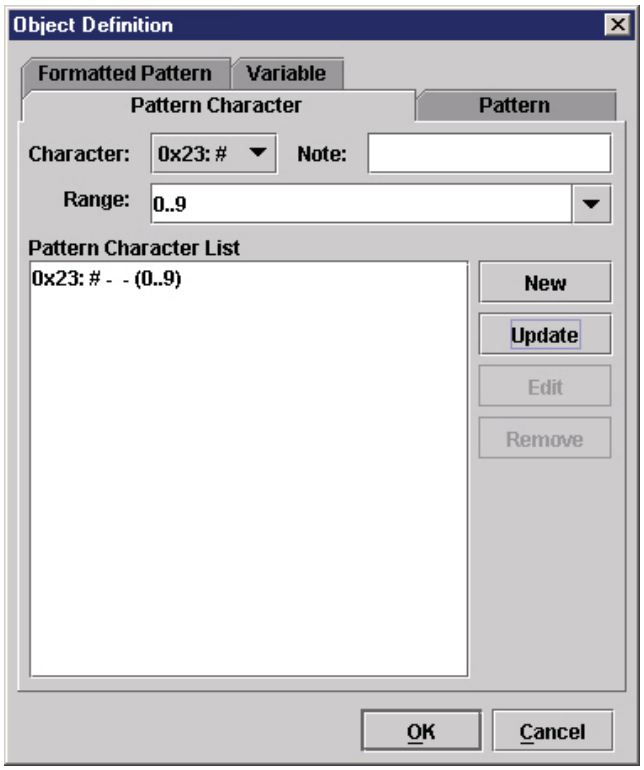



**Figure 156 Defining a Pattern Character**

5. Click **Add** to add the pattern character to the list. See Figure 156.

Next, set up a full pattern using the pattern character just defined.

6. Click the **Pattern** tab.
7. Type **`Length`** in the Name field. This is the name of the first pattern.
8. In the Pattern field, type **`####`** for the pattern character to be used.

**NOTE:** The number of pattern characters that can be entered to form a pattern is unlimited.

9. Click **Add** to add the pattern to the list.
10. Click **New** to clear the Name and Pattern fields.
11. Type **`Width`** in the Name field. This is the name of the second pattern.
12. In the Pattern field, type **`####`** for the pattern character to be used.

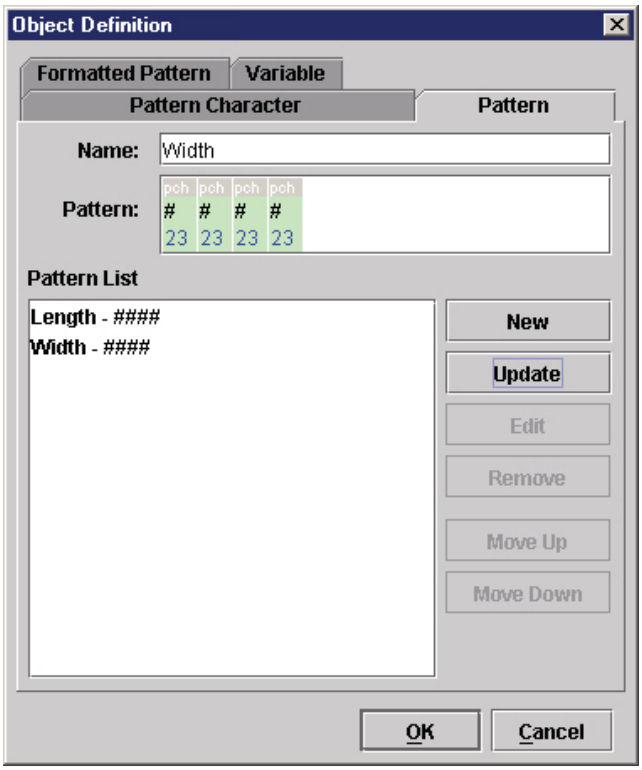



**Figure 157 Defining Patterns**

13. Click **Add** to add the pattern to the list. See Figure 157.
14. Click **OK** to return to the CST Manager.

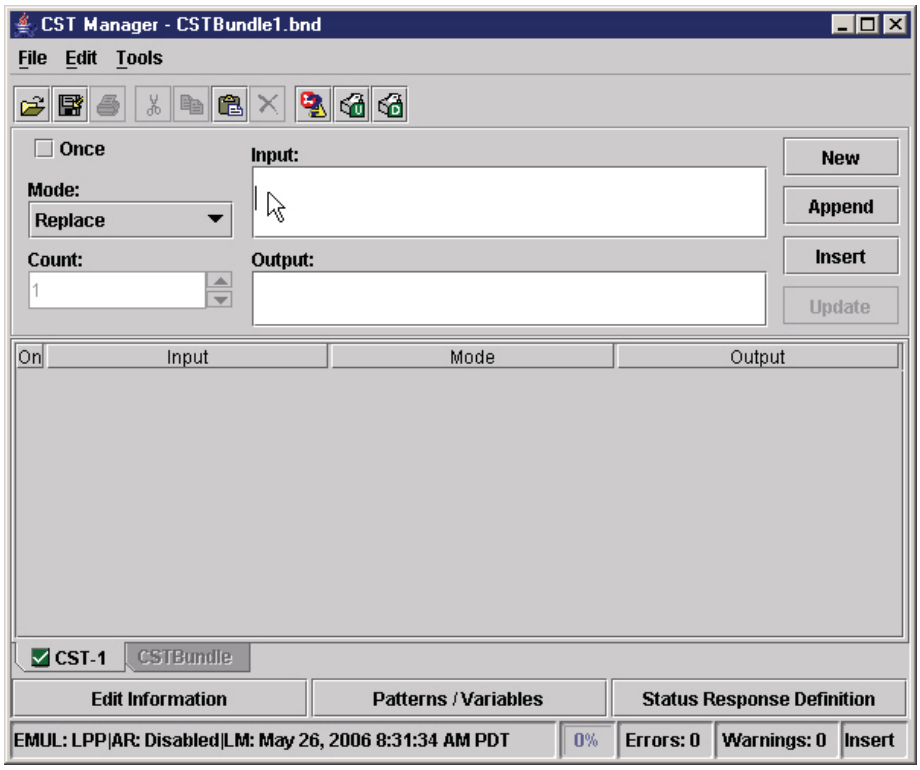



**Figure 158 Selecting the Input Field**

Now you can use the just defined pattern in the CST. Create an entry in the CST where the input field specifies the thermal printer 1 command sequence *bbbb* be replaced by the Width pattern and *cccc* be replaced by the Length pattern.

15. Click the **Input** field to place the cursor. See Figure 158.
16. Press the down arrow key to enter Hex entry mode.
17. Type **1B** (for ESC).
18. Press the up arrow key to enter ASCII entry mode.
19. Type **Daaaa,**.
20. Right-click to the right of the last character position.
21. Hover the pointer over **Insert Pattern**. A list of available patterns displays.
22. Select **Width**.
23. Press the right arrow key to reposition the cursor and type **,** (comma).
24. Right-click to the right of the comma and select **Insert Pattern ▶ Length**.

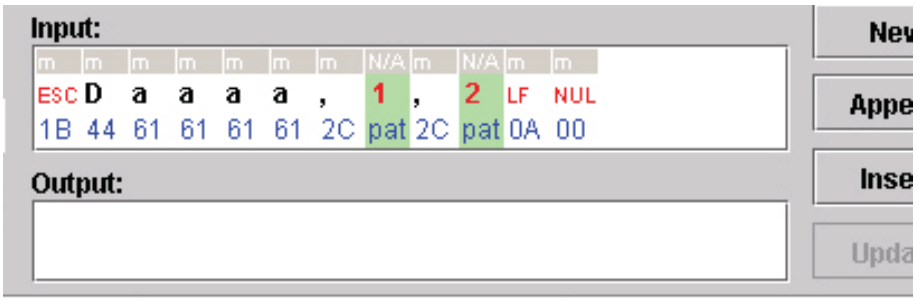



**Figure 159 Entering the Input String**

25. Press the right arrow key, then the down arrow key and type **`0A00`** (for LF and NUL). See Figure 159.

**NOTE:** The entry in the CST will show “pat” (Pattern) in the attribute field and a pattern number in the character field. The hex value shown below the pattern number has no specific meaning.

Since the *aaaa* value is not going to be used, we need to give these characters the Don’t Care attribute.

26. Select **aaaa**.
27. Right-click the selected aaaa and select **Don’t Care**. The attribute field changes from “m” (Match) to “dc” (Don’t Care).
28. In the Output field, type **`~PAPER;CALIBRATE`**. This PGL command replaces the “<ESC>Daaaa” part of the thermal printer 1 command.
29. Continue by typing **`;LENGTH`**[space].

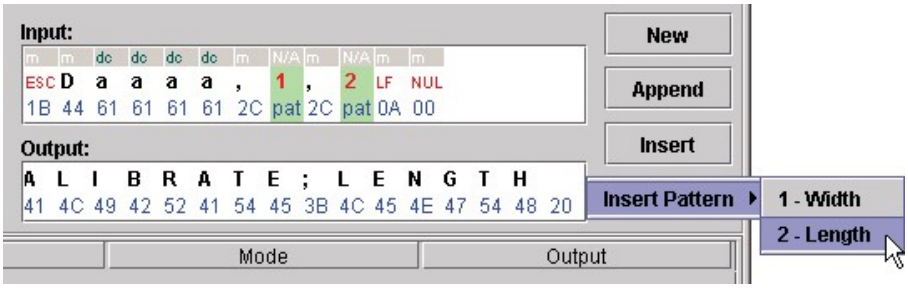



**Figure 160 Entering the Output String**

30. Right-click at the insertion point and select **Insert Pattern ▶ 2 - Length**. See Figure 160.

**NOTE:** Make sure you right-click to the right of the space.

31. Press the right arrow key and type **`;WIDTH`**[space].
32. Right-click at the insertion point and select **Insert Pattern ▶ 1 - Width**.
33. Press the right arrow key, then the down arrow key and type **`0D0A`** (for CR and LF).

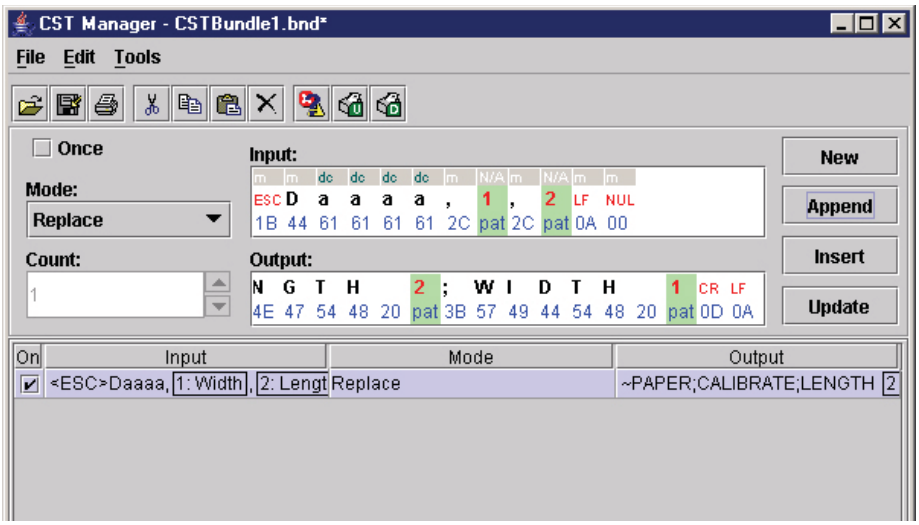



**Figure 161 The Appended CST**

34. Click **Append**. See Figure 161.

Now you will test the newly created CST.

35. Select **Tools ▶ Test**. The Test window opens. See Figure 162.

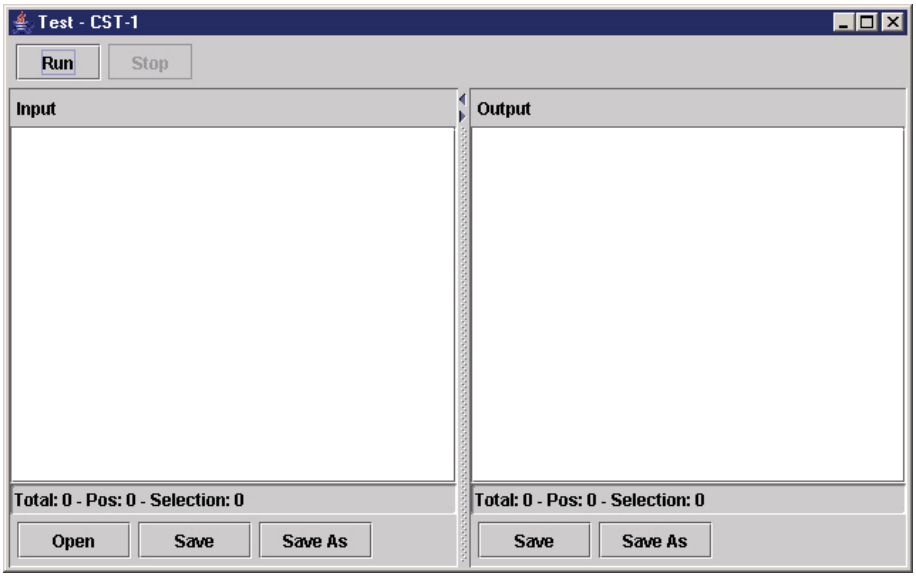



**Figure 162 The Test Window**

36. Right-click the Input window.
37. Select **View ▶ Hex**. To enter the Hex entry mode.
38. Click just to the right of the eight zeros to position the cursor.

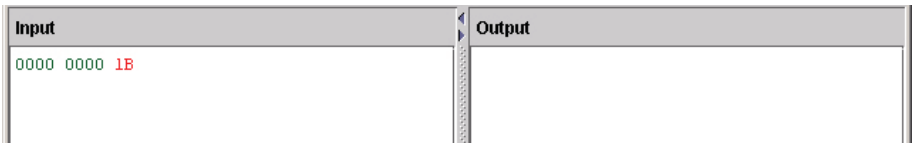



**Figure 163 Hex Entry Mode**

39. Type **1B**. To enter the hex equivalent of <ESC>. See Figure 163.

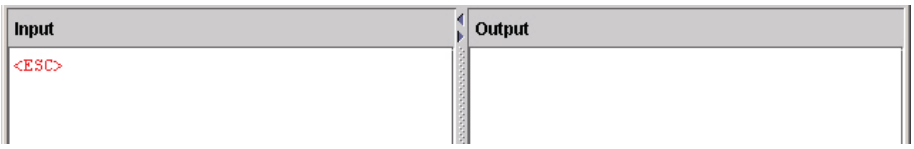



**Figure 164 Mnemonics Entry Mode**

40. Right-click the Input window and select **View ▶ Mnemonics**. To enter the Mnemonics entry mode. Notice the 1B changed to <ESC>. See Figure 164.
41. Type D0123,0450,0600.
42. Right-click the Input window and select **View ▶ Hex**.
43. Click just to the right of **0010** on the second line.

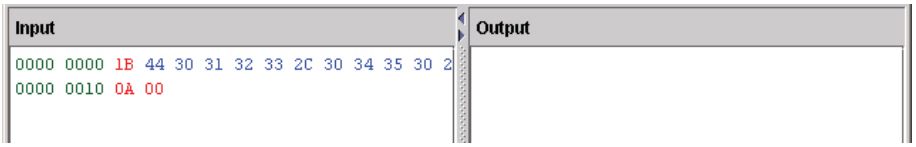



**Figure 165 Hex Equivalents of LF and NUL**

44. Type **0A00**. To enter the hex equivalent of LF and NUL. See Figure 165.
45. Right-click the Input window and select **View ▶ Mnemonics**.
46. Click **Run** to test the CST against your input.

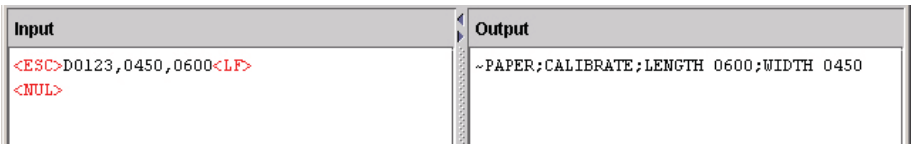



**Figure 166 Successful CST Test Results**

The length and width information have successfully been placed in the correct position in the PGL command. See Figure 166.

**NOTE:** If a value outside the specified range (in this case, outside the range 0..9) is entered, no conversion takes place and the input string is passed on to the printer unmodified.

## Variable Tab

Use Variable tab to define variables. Use a variable to store data from the host so that it can be used at a later time. To define a variable, enter the name of the variable and add it to the Variable List. To store data into the variable use the Store mode (page 143). To clear the content of all defined variables use the Reset All Variables mode (page 143).

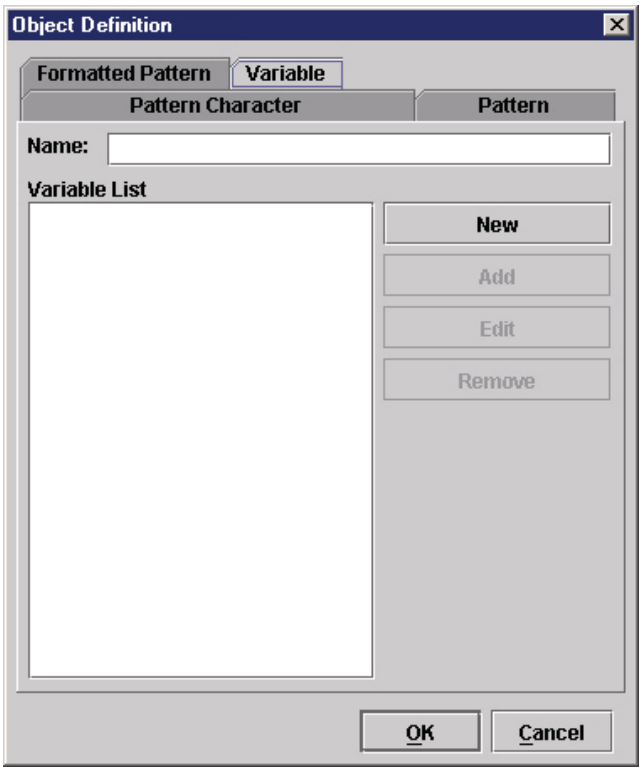



**Figure 167 Variable Tab**

**Name:** The name of the variable. This name appears in pop-up menus where you insert and use variables.

**Variable List**

Lists all the variables that you have defined and added to the list.

**New:** Click **New** to clear the Name field.

**Add:** Click **Add** to add the named variable to the end of the Variable List.

**NOTE:** The name of the variable must be unique.

**Edit:** Select an item in the Variable List, and click **Edit** to copy its name into the Name field.

**NOTE:** If you select more than one item, only the name of the first item will copy into the Name field.

**Remove:** Select one or more items in the Variable List, and click **Remove** to remove them from the list.

**IMPORTANT** **Removing variables invalidates entries that use the variables.**

## Status Response Definition

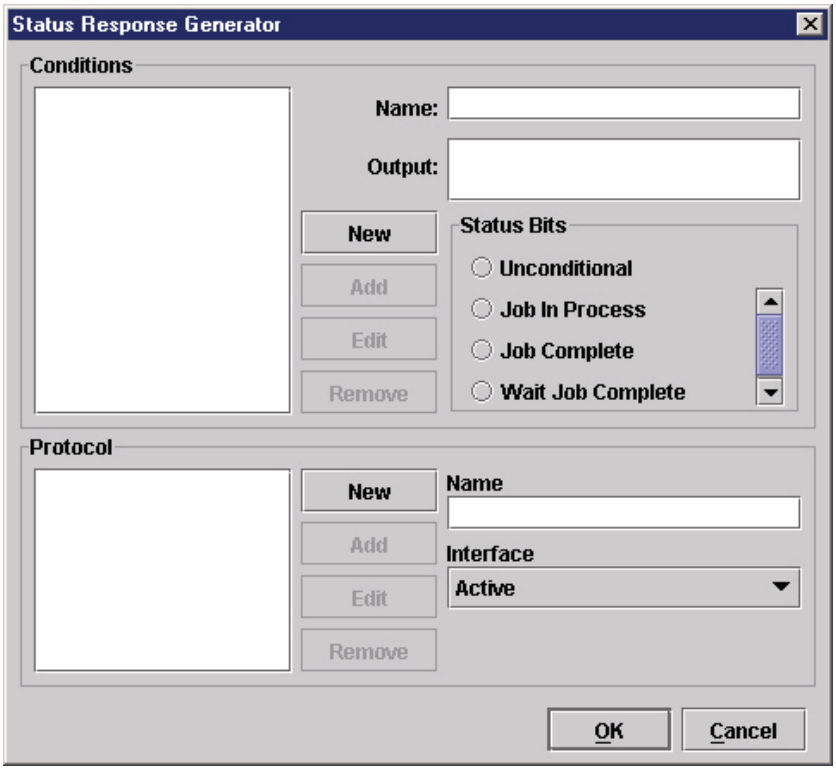



**Figure 168 Status Response Generator**

Click **Status Response Definition**, and the Status Response Generator dialog box opens. See Figure 168.

Use the Status Response Generator to define status responses. You can define printer status bits that make up the condition on which a response should be generated, as well as the details of each response.

## Conditions

Use the upper section of the Status Report Generator to add new conditions or select existing conditions to edit or remove.

**Name:** The name of the condition.

**Output:** The response for when the condition is met.

### Status Bits

**Unconditional:** To create an unconditional protocol. When you select Unconditional, all other status bits are disabled.

**NOTE:** If you have already added other conditions, and then you later add a condition with the Unconditional Stop Bits property, all other conditions will be removed from the list.

**Job Complete:** To create a Job Complete condition.

**Job In Process:** To create a Job In Process condition.

**NOTE:** You cannot have more than one condition in the Conditions list with the same Status Bits setting.

### Conditions List

Lists all the conditions that you have defined and added to the list. A condition is listed by its name followed by a separator and the output sequence. In the output sequence, control codes display as mnemonics and other non-printable characters display as red dots.

**New:** Click **New** to reset all data fields.

**Add:** If the displayed text on the second button is Add, the condition has not been added to the Conditions list. Click **Add** to add the defined condition to the end of the Conditions list.

**Update:** If the displayed text on the second button is Update, the condition is already in the Conditions list. Click **Update** to update the condition properties with the new properties.

**Edit:** Select an item in the Conditions list, and click **Edit** to edit it.

**NOTE:** If you select more than one item, you can only to edit the first item.

**Remove:** Select one or more items in the Conditions list, and click **Remove** to remove them from the list.

**IMPORTANT** **Removing conditions invalidates entries that use the conditions.**

## Protocols

Use the lower section of the Status Report Generator to add new protocols or select existing protocols to edit or remove.

A protocol is a single condition or set of conditions.

**Name:** The name of the protocol. This name appears in pop-up menus where you insert and use protocols.

**Interface:** Use this drop-down list to select which (host) interface the response should go to. Active is the interface on which the CST operates.

### Protocol List

**New:** Click **New** to reset the Name and Interface fields.

**Add:** If the text displayed on the second button is Add, the protocol has not been added to the Protocol list. Click **Add** to add the protocol to the Protocol list.

**NOTE:** The protocol appears in the list with its name followed by a separator and the name of the interface used.

**Update:** If the text displayed on the second button is Update, the protocol is already in the Protocol list. Click **Update** to update the protocol properties with the new properties.

**Edit:** Select an item in the Protocol list, and click **Edit** to edit it.

**NOTE:** If you select more than one item, you can only to edit the first item.

**Remove:** Select one or more items in the Protocol list, and click **Remove** to remove them from the list.

**IMPORTANT** **Removing protocols invalidates entries that use the protocols.**

## How To Use Conditions And Protocols

After you define one or more protocols, return to the CST Manager to create a new entry available for editing. Select **Response** from the Mode drop-down list. In the Input field, enter the data on which the response should be triggered. Right-click the Output field, and select the desired protocol from the pop-up menu.

You can enter prefixes and suffixes, and these will be sent with the defined output of the protocol. For example, if the output is defined as **pre <Series-1> suf**, and the On_Empty condition is met, then **pre 1<CR> suf** will be the response.

A protocol displays with the protocol icon over a light red background with the mnemonic **ptc**. To see protocol details, i.e. name and interface, hover the pointer over the protocol icon in the Output field to display a screen tip. See Figure 169.

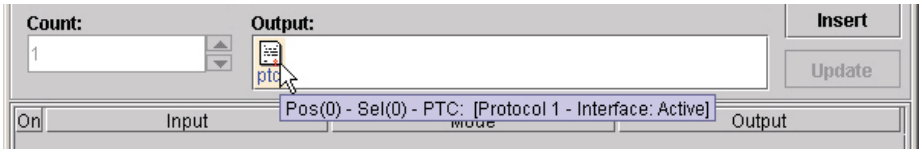



**Figure 169 Protocol Screen Tip**

## Status Response Generator Example

A host computer sends out an ENQ character to request the printer's status. The host computer expects to receive an ACK character when the job has finished, or a NAK character if the printer is printing.

In the CST Manager, click **Status Response Definition**. The Status Response Generator dialog box opens. See Figure 170.

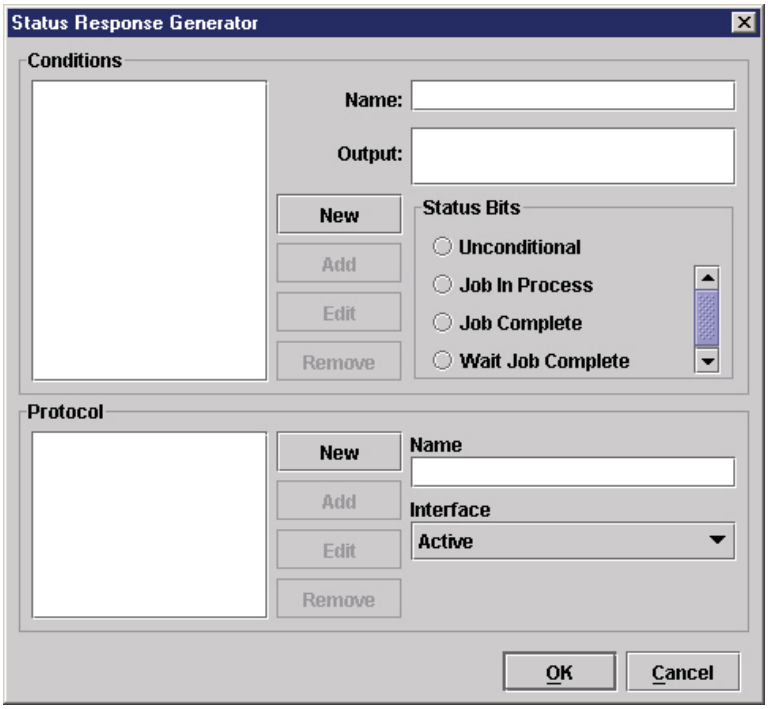



**Figure 170 Status Response Generator**

You can define the protocol conditions in the upper half of this window. This protocol, along with other available protocols, will be listed in the lower half. From this list, the correct protocol is selected during the creation of a CST.

**NOTE:** You must add protocol conditions before you can add a protocol. For now you will only define a single protocol.

1. Use a descriptive name for the first condition that should be tested. In the Name field, type **`job_printing`**.

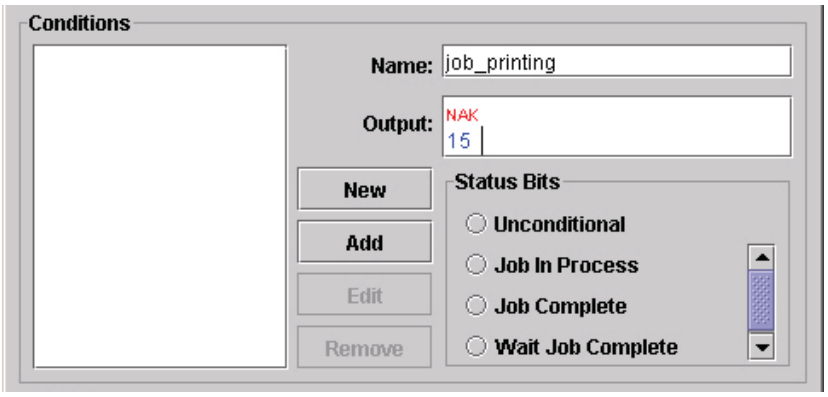



**Figure 171 Switching Between ASCII and Hex Entry Modes**

2. Define the output that should be transmitted to the host. In the Output field, press the down arrow key and type **`15`** (NAK). See Figure 171.

**NOTE:** Use the up and down arrow keys to switch between the ASCII and Hex entry modes.

3. Under Status Bits, click **Job In Process** to select the correct condition to test.

Here is a description of the Status Bits conditions:

- **Unconditional:** This condition is always TRUE. The response is sent to the host immediately.
- **Job Complete:** This condition is TRUE if the printer is not processing or printing any data. The response is sent to the host immediately but ONLY IF this condition is TRUE.
- **Job In Process:** This condition is TRUE if the printer is processing or printing data. The response is sent to the host immediately but ONLY IF this condition is TRUE.
- **Wait For Job Complete:** This condition is TRUE if the printer is not processing or printing any data. The response is sent to the host AS SOON AS this condition is TRUE.

4. Click **Add** to add the entry to the list of protocol conditions.

Now you will add a second condition.

5. In the Name field, type **`job_done`**.
6. In the Output field, press the down arrow key and type **`06`** (ACK).
7. Under Status Bits, click **Job Complete**.

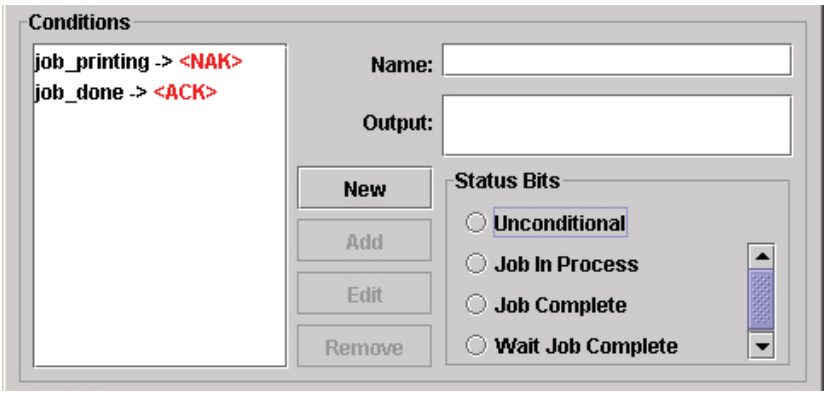



**Figure 172 Adding Conditions**

8. Click **Add** to add the entry to the list of protocol conditions. See Figure 172.
9. Name this protocol that is comprised of the two conditions. In the Name field (bottom half of window), type **`print_complete`**.
10. Select the interface to use for the status response. Click the Interface down arrow, and select **Active**.

**NOTE:** The interface selected does not have to be the same interface the host is using for a status request. The available interfaces are Active, Serial, Parallel, and Network.

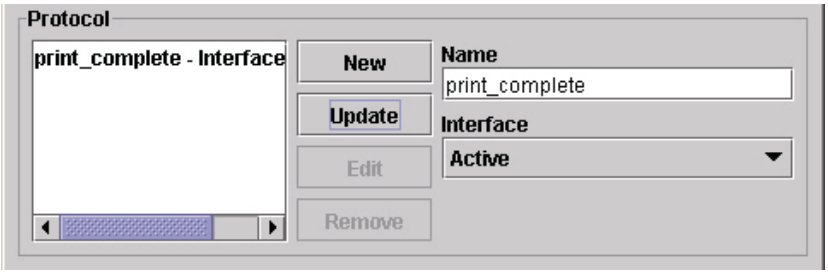



**Figure 173 Adding Protocols**

11. Click **Add** to add it to the list of protocols. See Figure 173.
12. Click **OK** to return to the CST manager.

**NOTE:** For the status reporting to work, the printer will have to be online. Offline conditions, like all error situations, cannot be transmitted to the host.

Now you will enter the input string that will trigger the protocol you just created.

13. Click the **Mode** down arrow, and select **Response**.
14. In the Input field, press the down arrow key and type **`05`** (ENQ).

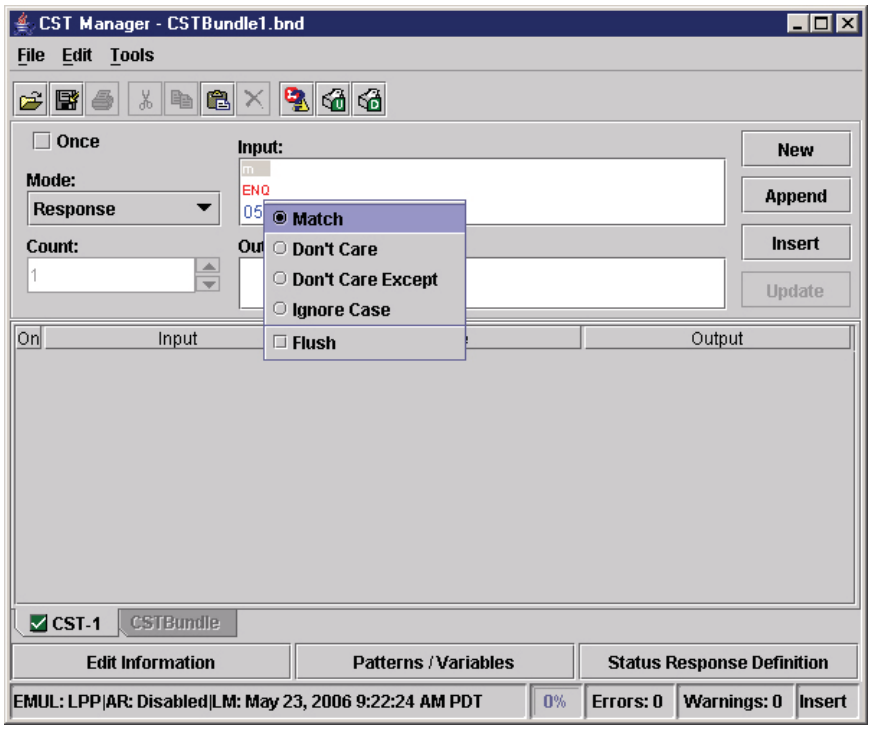



**Figure 174 Response Mode Attributes**

15. Right-click your input string. A list of possible attributes displays. See Figure 174.

**NOTE:** In addition to the four common attributes, Response mode has the Flush attribute. This attribute removes the input string from the datastream, preventing it from being printed.

16. Click away from the attributes to close the list.
17. Right-click the Output field to specify which protocol should be used when a status is requested. A list of protocols (in this case just one) displays.
18. Select print_complete.
19. Click **Append** to append it to the CST.
20. Select **File ▶ Save** or **File ▶ Save As** to save the bundle.
21. Download the bundle file to the printer.
22. Enable the CST in the printer.

The printer now has a status reporting protocol.

**NOTE:** The input string used to request the printer status does not have to be a single control code like the ENQ character. Likewise, the output does not have to be NAK or ACK. It can be anything that the host can transmit and handle.

It is possible to create a status reporting protocol that uses sentences. For example, replace the ENQ in the example with “Printer, how are you doing on this print job?” Replace the Job In Progress condition output with “I am almost done.” Finally, replace the Job Complete condition output with “I have just finished this job.”

# CST Manager And EBCDIC

In addition to the standard ASCII character set commonly used for printing, many applications use the EBCDIC character set. The CST Manger is specifically designed to work with ASCII. To work with EBCDIC coded files, characters in the Input and Output strings need to be entered in their EBCDIC representation. Since the CST Manager does not have an EBCDIC view mode, these entries must be entered in hex.

### EBCDIC/ASCII Table

To help in creating EBCDIC CSTs, refer to the following table for Twinax, Coax LU-1, Coax LU-3, and ASCII.

**NOTE:** For LU-3 in the following table: EM = End of Message, FF = Form Feed, NL = New Line, and CR = Carriage Return.

| Hex | Mnemonic | EBCDIC | | Hex | Mnemonic | ASCII |
|---|---|---|---|---|---|---|
| | | Twinax/LU-1 | LU-3 | | | |
| 00 | NUL | Null | Null | 00 | NUL | Null |
| 01 | SOH | Start of Header | EM | 01 | SOH | Start of Header |
| 02 | STX | Start of Text | FF | 02 | STX | Start of Text |
| 03 | ETX | End of TEXT | NL | 03 | ETX | End of Text |
| 04 | PF | Punch Off | | 04 | EOT | End of Transmission |
| 05 | HT | Horizontal Tab | CR | 05 | ENQ | Enquiry |
| 06 | LC | Lower Case | | 06 | ACK | Acknowledge |
| 07 | BEL | Delete | | 07 | BEL | Bell |
| 08 | | | > | 08 | BS | Backspace |
| 09 | | | < | 09 | HT | Horizontal Tab |
| 0A | SMM | Start of Man. Message | ¢ | 0A | LF | Line Feed |
| 0B | VT | Vertical Tab | ! | 0B | VT | Vertical Tab |
| 0C | FF | Form Feed | ) | 0C | FF | Form Feed |
| 0D | CR | Carriage Return | ( | 0D | CR | Carriage Return |
| 0E | SO | Shift Out | } | 0E | SO | Shift Out |
| 0F | SI | Shift In | { | 0F | SI | Shift In |
| 10 | DLE | Data Link Escape | SP | 10 | DLE | Data Link Escape |
| 11 | DC1 | Device Control 1 | = | 11 | DC1 | Device Control 1 |
| 12 | DC2 | Device Control 2 | ‘ | 12 | DC2 | Device Control 2 |
| 13 | TM | Tape mark | “ | 13 | DC3 | Device Control 3 |
| 14 | RES | Restore | / | 14 | DC4 | Device Control 4 |
| 15 | NL | New Line | \ | 15 | NAK | Neg. Acknowledge |

| Hex | Mnemonic | EBCDIC | | Hex | Mnemonic | ASCII |
|---|---|---|---|---|---|---|
| | | Twinax/LU-1 | LU-3 | | | |
| 16 | BS | Back space | \| | 16 | SYN | Synchronous Idle |
| 17 | IL | Idle | \| | 17 | ETB | End of Transm. Block |
| 18 | CAN | Cancel | ? | 18 | CAN | Cancel |
| 19 | EM | End of Medium | ! | 19 | EM | End of Medium |
| 1A | CC | Cursor Control | $ | 1A | SUB | Substitute |
| 1B | CU1 | Customer Use 1 | ¢ | 1B | ESC | Escape |
| 1C | IFS | Interch. File Separator | | 1C | FS | File Separator |
| 1D | IGS | Interch. Grp Separator | | 1D | GS | Group Separator |
| 1E | IRS | Interch. Rec. Separator | $ | 1E | RS | Record Separator |
| 1F | IUS | Interch. Unit Separator | | 1F | US | Unit Separator |
| 20 | DS | Digit Select | 0 | 20 | SP | Space |
| 21 | SOS | Start of Significance | 1 | 21 | ! | Exclamation point |
| 22 | FS | Field Separator | 2 | 22 | “ | Quotation Mark |
| 23 | | | 3 | 23 | # | Number Sign |
| 24 | BYP | Bypass | 4 | 24 | $ | Dollar sign |
| 25 | LF | Line Feed | 5 | 25 | % | Percent |
| 26 | ETB | End of Transm. Block | 6 | 26 | & | Ampersand |
| 27 | ESC | Escape | 7 | 27 | ‘ | Apostrophe |
| 28 | | | 8 | 28 | ( | Left Parenthesis |
| 29 | | | 9 | 29 | ) | Right Parenthesis |
| 2A | SM | Set Mode | \| | 2A | * | Asterisk |
| 2B | CU2 | Customer Use 2 | - | 2B | + | Plus Sign |
| 2C | | | # | 2C | , | Comma |
| 2D | ENQ | Enquiry | @ | 2D | - | Minus Sign |
| 2E | ACK | Acknowledge | % | 2E | . | Period |
| 2F | BEL | Bell | _ | 2F | / | Slash |
| 30 | | | & | 30 | 0 | Zero |
| 31 | | | | 31 | 1 | One |
| 32 | SYN | Synchronous Idle | . | 32 | 2 | Two |
| 33 | | | , | 33 | 3 | Three |
| 34 | PN | Punch On | : | 34 | 4 | Four |
| 35 | RS | Reader Stop | + | 35 | 5 | Five |

| Hex | Mnemonic | EBCDIC | | Hex | Mnemonic | ASCII |
|---|---|---|---|---|---|---|
| | | Twinax/LU-1 | LU-3 | | | |
| 36 | UC | Upper Case | ¬ | 36 | 6 | Six |
| 37 | | | | 37 | 7 | Seven |
| 38 | | | | 38 | 8 | Eight |
| 39 | | | | 39 | 9 | Nine |
| 3A | | | | 3A | : | Colon |
| 3B | CU3 | Customer Use 3 | ~ | 3B | ; | Semicolon |
| 3C | DC4 | Device Control 4 | ~ | 3C | < | Less-than Sign |
| 3D | NAK | Negative Acknowledge | ` | 3D | = | Equal Sign |
| 3E | | | | 3E | > | Greater-than Sign |
| 3F | SUB | Substitute | | 3F | ? | Question Mark |
| 40 | SP | Space | | 40 | @ | At Sign |
| 41 | | | | 41 | A | A |
| 42 | | | | 42 | B | B |
| 43 | | | | 43 | C | C |
| 44 | | | | 44 | D | D |
| 45 | | | | 45 | E | E |
| 46 | | | | 46 | F | F |
| 47 | | | | 47 | G | G |
| 48 | | | | 48 | H | H |
| 49 | | | | 49 | I | I |
| 4A | ¢ | Cent Sign | | 4A | J | J |
| 4B | . | Period | | 4B | K | K |
| 4C | < | Less-than Sign | | 4C | L | L |
| 4D | ( | Left Parenthesis | | 4D | M | M |
| 4E | + | Plus sign | | 4E | N | N |
| 4F | \| | Logical Or | | 4F | O | O |
| 50 | & | Ampersand | “ | 50 | P | P |
| 51 | | | | 51 | Q | Q |
| 52 | | | | 52 | R | R |
| 53 | | | ¢ | 53 | S | S |
| 54 | | | ! | 54 | T | T |
| 55 | | | | 55 | U | U |

| Hex | Mnemonic | EBCDIC | | Hex | Mnemonic | ASCII |
|---|---|---|---|---|---|---|
| | | Twinax/LU-1 | LU-3 | | | |
| 56 | | | | 56 | V | V |
| 57 | | | | 57 | W | W |
| 58 | | | | 58 | X | X |
| 59 | | | | 59 | Y | Y |
| 5A | ! | Exclamation Point | | 5A | Z | Z |
| 5B | $ | Dollar Sign | | 5B | [ | Opening Bracket |
| 5C | * | Asterisk | | 5C | \ | Back Slash |
| 5D | ) | Right Parenthesis | | 5D | ] | Closing Bracket |
| 5E | ; | Semicolon | | 5E | ^ | Caret |
| 5F | ¬ | Logical NOT | \| | 5F | _ | Underline |
| 60 | - | Minus Sign | | 60 | ` | Grave Accent |
| 61 | / | Slash | | 61 | a | a |
| 62 | | | | 62 | b | b |
| 63 | | | | 63 | c | c |
| 64 | | | | 64 | d | d |
| 65 | | | | 65 | e | e |
| 66 | | | | 66 | f | f |
| 67 | | | | 67 | g | g |
| 68 | | | | 68 | h | h |
| 69 | | | | 69 | i | i |
| 6A | | | | 6A | j | j |
| 6B | , | Comma | | 6B | k | k |
| 6C | % | Percent | | 6C | k | k |
| 6D | _ | Underline | | 6D | m | m |
| 6E | > | Greater-than Sign | | 6E | n | n |
| 6F | ? | Question Mark | | 6F | o | o |
| 70 | | | # | 70 | p | p |
| 71 | | | | 71 | q | q |
| 72 | | | | 72 | r | r |
| 73 | | | @ | 73 | s | s |
| 74 | | | $ | 74 | t | t |
| 75 | | | | 75 | u | u |

| Hex | Mnemonic | EBCDIC | | Hex | Mnemonic | ASCII |
|---|---|---|---|---|---|---|
| | | Twinax/LU-1 | LU-3 | | | |
| 76 | | | | 76 | v | v |
| 77 | | | | 77 | w | w |
| 78 | | | | 78 | x | x |
| 79 | | | | 79 | y | y |
| 7A | : | Colon | | 7A | z | z |
| 7B | # | Number Sign | | 7B | { | Opening Brace |
| 7C | @ | At Sign | | 7C | \| | Vertical Line |
| 7D | ‘ | Apostrophe | | 7D | } | Closing Brace |
| 7E | = | Equal Sign | | 7E | ~ | Tilde |
| 7F | “ | Quotation Mark | # | 7F | DEL | Delete |
| 80 | | | a | 80 | | |
| 81 | a | a | b | 81 | | |
| 82 | b | b | c | 82 | | |
| 83 | c | c | d | 83 | | |
| 84 | d | d | e | 84 | IND | Index |
| 85 | e | e | f | 85 | NEL | Next Line |
| 86 | f | f | g | 86 | SSA | Start of Selected Area |
| 87 | g | g | h | 87 | ESA | End of Selected Area |
| 88 | h | h | i | 88 | HTS | Horz. Tabulation Set |
| 89 | i | i | j | 89 | HTJ | Horz. Tab w. Justif. |
| 8A | | | k | 8A | VTS | Vertical Tabulation Set |
| 8B | | | l | 8B | PLD | Partial Line Down |
| 8C | | | m | 8C | PLU | Partial Line Up |
| 8D | | | n | 8D | RI | Reverse Index |
| 8E | | | o | 8E | SS2 | Single Shift 2 |
| 8F | | | p | 8F | SS3 | Single Shift 3 |
| 90 | | | q | 90 | DCS | Device Control String |
| 91 | j | j | r | 91 | PU1 | Private Use 1 |
| 92 | k | k | s | 92 | PU2 | Private Use 2 |
| 93 | k | k | t | 93 | STS | Set Transmit State |
| 94 | m | m | u | 94 | CCH | Cancel character |
| 95 | n | n | v | 95 | MW | Message Waiting |

| Hex | Mnemonic | EBCDIC | | Hex | Mnemonic | ASCII |
|---|---|---|---|---|---|---|
| | | Twinax/LU-1 | LU-3 | | | |
| 96 | o | o | w | 96 | SPA | Start of Protected Area |
| 97 | p | p | x | 97 | EPA | End of Protected Area |
| 98 | q | q | y | 98 | | |
| 99 | r | r | z | 99 | | |
| 9A | | | “ | 9A | | |
| 9B | | | ¢ | 9B | CSI | Control Seq. Introducer |
| 9C | | | ! | 9C | ST | String Terminator |
| 9D | | | | 9D | OSC | Operating System Cmd. |
| 9E | | | ; | 9E | PM | Privacy Message |
| 9F | | | * | 9F | APC | Applic. Program Cmd. |
| A0 | | | A | A0 | | |
| A1 | | | B | A1 | | |
| A2 | s | s | C | A2 | | |
| A3 | t | t | D | A3 | | |
| A4 | u | u | E | A4 | | |
| A5 | v | v | F | A5 | | |
| A6 | w | w | G | A6 | | |
| A7 | x | x | H | A7 | | |
| A8 | y | y | I | A8 | | |
| A9 | z | z | J | A9 | | |
| AA | | | K | AA | | |
| AB | | | L | AB | | |
| AC | | | M | AC | | |
| AD | | | N | AD | | |
| AE | | | O | AE | | |
| AF | | | P | AF | | |
| B0 | | | Q | B0 | | |
| B1 | | | R | B1 | | |
| B2 | | | S | B2 | | |
| B3 | | | T | B3 | | |
| B4 | | | U | B4 | | |

| Hex | Mnemonic | EBCDIC | | Hex | Mnemonic | ASCII |
|---|---|---|---|---|---|---|
| | | Twinax/LU-1 | LU-3 | | | |
| B5 | | | V | B5 | | |
| B6 | | | W | B6 | | |
| B7 | | | X | B7 | | |
| B8 | | | Y | B8 | | |
| B9 | ` | Grave Accent | Z | B9 | | |
| BA | | | # | BA | | |
| BB | | | @ | BB | | |
| BC | | | $ | BC | | |
| BD | | | | BD | | |
| BE | | | ; | BE | | |
| BF | | | * | BF | | |
| C0 | | | | C0 | | |
| C1 | A | A | | C1 | | |
| C2 | B | B | | C2 | | |
| C3 | C | C | | C3 | | |
| C4 | D | D | | C4 | | |
| C5 | E | E | | C5 | | |
| C6 | F | F | | C6 | | |
| C7 | G | G | | C7 | | |
| C8 | H | H | | C8 | | |
| C9 | I | I | | C9 | | |
| CA | | | | CA | | |
| CB | | | | CB | | |
| CC | | | | CC | | |
| CD | | | | CD | | |
| CE | | | | CE | | |
| CF | | | | CF | | |
| D0 | | | | D0 | | |
| D1 | J | J | | D1 | | |
| D2 | K | K | | D2 | | |
| D3 | L | L | | D3 | | |
| D4 | M | M | | D4 | | |

| Hex | Mnemonic | EBCDIC | | Hex | Mnemonic | ASCII |
|---|---|---|---|---|---|---|
| | | Twinax/LU-1 | LU-3 | | | |
| D5 | N | N | | D5 | | |
| D6 | O | O | | D6 | | |
| D7 | P | P | | D7 | | |
| D8 | Q | Q | | D8 | | |
| D9 | R | R | | D9 | | |
| DA | | | | DA | | |
| DB | | | | DB | | |
| DC | | | | DC | | |
| DD | | | | DD | | |
| DE | | | | DE | | |
| DF | | | | DF | | |
| E0 | | | | E0 | | |
| E1 | | | | E1 | | |
| E2 | S | | | E2 | | |
| E3 | T | | | E3 | | |
| 7E4 | U | | | E4 | | |
| E5 | V | | | E5 | | |
| E6 | W | | | E6 | | |
| E7 | X | | | E7 | | |
| E8 | Y | | | E8 | | |
| E9 | Z | | | E9 | | |
| EA | | | | EA | | |
| EB | | | | EB | | |
| EC | | | | EC | | |
| ED | | | | ED | | |
| EE | | | | EE | | |
| EF | | | | EF | | |
| F0 | 0 | Zero | | F0 | | |
| F1 | 1 | One | | F1 | | |
| F2 | 2 | Two | | F2 | | |
| F3 | 3 | Three | | F3 | | |
| F4 | 4 | Four | | F4 | | |

| Hex | Mnemonic | EBCDIC | | Hex | Mnemonic | ASCII |
|---|---|---|---|---|---|---|
| | | Twinax/LU-1 | LU-3 | | | |
| F5 | 5 | Five | | F5 | | |
| F6 | 6 | Six | | F6 | | |
| F7 | 7 | Seven | | F7 | | |
| F8 | 8 | Eight | | F8 | | |
| F9 | 9 | Nine | | F9 | | |
| FA | | | | FA | | |
| FB | | | | FB | | |
| FC | | | | FC | | |
| FD | | | | FD | | |
| FE | | | | FE | | |
| FF | | | | FF | | |

# CST Manager Version Control System

The Version Control System (VCS) allows you to assign an application name and add version information to the files. This information helps you easily identify the purpose of the files created and in which application. The VCS prints the application name and version information in the printer's configuration printout.

## Application Name and Version Information

The application name is a logical user-defined name for the CST application and is stored inside the CST Configuration file. The maximum length is 16 characters.

The version information contains the following:

- **Version Number** – V<version>.<revision><release level>

  where:

  <version> = decimal number ( 1 … n )

  <revision> = decimal number ( two digits: 00 … 99 )

  <release level> = upper-case alphabetic character ( A … ZZ )

**Examples:** V1.00A (initial version), V2.06C, V3.21AA, V3.21BX.

- **Last Modification Date** - <month> - <day> - <year>

  Indicates when the PAA CST File was last modified.

- **File ID** – Unique 32-bit hexadecimal number (checksum).

**NOTE:** The VCS system cannot prevent the creation of two files that contain the same application name and version information but different content. To help identify such similar files, the Manager will include a checksum in the file.

Both the version number and last modification date are stored in the respective configuration file.

### Creating a New File

When creating and saving a file for the first time, the Set Application Name dialog box opens prompting you to enter a logical name to identify the application.

**Figure 175 Setting the CST Application Name**

### Opening an Existing File

When you select File -> Open, or upload a file from the printer, the VCS checks if the file contains version information. If not, a dialog box opens and prompts you to enter a logical application name. The version number is set to 1.00A. You can then start modifying the application.

### Modifying an Existing File

After opening an existing file, the process of building and modifying the application starts. To save your work as a new file or subsequent modifications of an existing file, do the following:

- Save As New File

Select File -> Save As. The application name is already assigned and the version number is 1.00A. Select a folder name, enter a file name, and click Save. The file is then stored on disk.

- Subsequent Saves

Select File -> Save. The Version Confirmation dialog box opens with save options. See Figure 176.

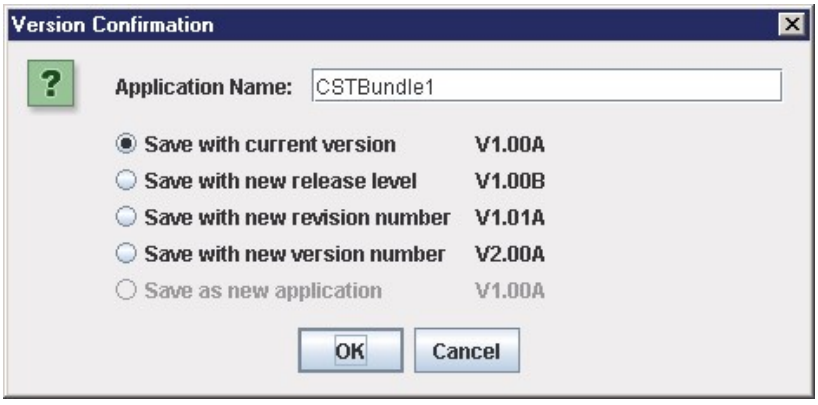



**Figure 176 Confirming the File Version**

**NOTE:** If you do not change the application name, the ‘Save as new application’ option is disabled. In this case, you must select one of the first four options. ‘Save with current version’ is the default selection.

If you change the application name, ‘Save as new application’ is enabled, allowing you to reset the version number to 1.00A.

The version numbers displayed with the options are the version numbers the CST Manager will store in the file.

**NOTE:** Version number increment rules.

When a file reaches release level Z and you select ‘Save with new release level’, the release level increments to AA. For example, 1.01Z becomes 1.01AA.

When the release level reaches ZZ and the you select ‘Save with new release level’, the release level resets to A and the revision number increments. For example, 1.01ZZ becomes 1.02A.

When the revision number reaches 99 and you select ‘Save with new revision number’, the revision number resets to 00, the release level resets to A, and the version number increments. For example, 1.99C becomes 2.00A.

## Viewing File Version Information

To view version information of a file, select File -> Properties.

**Figure 177 Viewing File Properties**

## Automatic File Backup System

The CST Manager automatically creates backups of the last 20 saved versions of a file. This backup system uses the file name (as specified in the File Save As … dialog) to create the following file and folder structure:

< jav.user.dir\backup > - the java user directory is the PNE install directory.

< File Name > - folder that will store the backups.

< ~ddmmyyyy_hhmmss>.bck - backup of the latest previous version of a file.

< ~ddmmyyyy_hhmmss>.bck - backup of the second latest previous version of a file

…

< ~ddmmyyyy_hhmmss>.bck - backup of the oldest previous version of the file.

**Example:**

File name = ‘PTNX_SecurePrinting.gcf

< jav.user.dir\backup >

PTNX_SecurePrinting

~11042008_123145.bck

~11042008_124432.bck

…

~11042008_145022.bck

## Backup History

The CST Manager has a Backup History option that allows you to view the backup history of a file. The system maintains the last 20 versions of the file. This dialog has options to clear the history, open an older version, and save under a different file name.

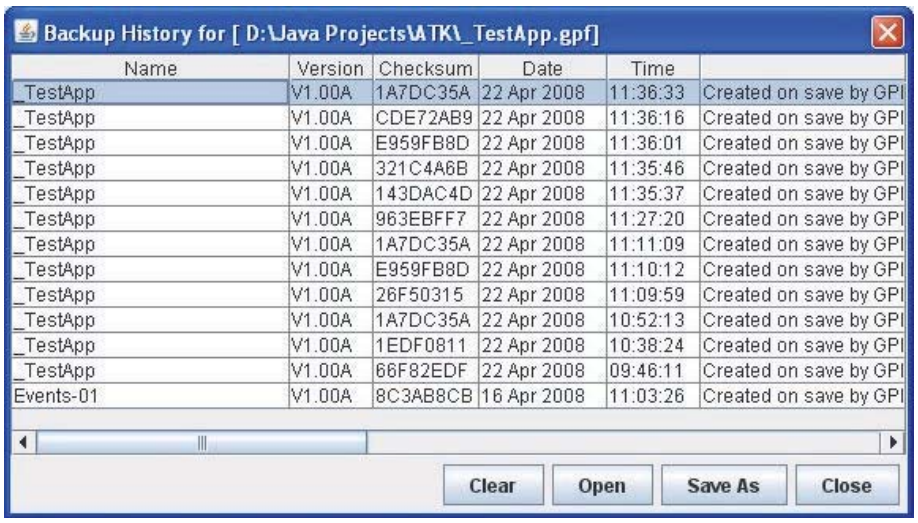



**Figure 178 Backup History Information**

- Name - displays the application name assigned to the file at the time the backup was created.
- Version - displays the version assigned to the file at the time the backup was created.
- Checksum - displays the checksum calculated over the data of the file at the time the backup was created.
- Data and Time - shows when the backup file was created.
- Notes - displays which version of the CST manager the backup file was created.
- Clear button - clears the history.
- Open button - opens the backup file for editing.
- Save As button - saves a backup file under a different name to a local storage medium.
- Close button - closes the dialog.

# 6 GPIO Manager

## Introduction

This chapter describes the Printronix GPIO function available for the Printronix SL5000r/T5000r series Thermal printers.

**NOTE:** Only limited GPIO support is available for Line Matrix printers. Please contact the Customer Support Center for information before ordering Line Matrix printers with GPIO.

GPIO is both hardware and software. The hardware is the I/O board to be mounted in the printer, and the software is the GPIO Manager. The GPIO hardware is a printed circuit board containing optically isolated inputs and outputs as well as relays. The GPIO software is both a printer resident GPIO event parser and a PC-based GPIO manager that allows the user to define how the general purpose I/O hardware should behave for the given application.

**NOTE:** Certain GPIO features in the printer can only be enabled by a special security key, described in Table 9 on page 193 and Table 10 on page 202.

## Events and Actions

GPIO operation is based on Events and Actions. Events can be either printer internal such as paper out or print complete, or they can be printer external such as opto-coupler 1 active. Actions are the result of an event and can be printer internal such as paper feed or printer external such as relay 1 active or reply to host where data is transmitted over the serial, parallel, or network interface. You can also define a number of events to be acted upon without the GPIO card installed in the printer and allow the printer to be adapted for the application in use.

# The Hardware

The GPIO hardware (Figure 179) consists of 16 opto-couplers, 4 SPDT relays, and the logic required to connect this hardware into the printing system.

Eight of the 16 opto-couplers are used as isolated inputs; these are the connections on which the external events happen. The remaining eight opto-couplers and the four SPDT relays are used as isolated outputs. Each of these outputs can be designated as an action in response to some event. The board is connected into the printing system through the printer's PCI bus.

None of the inputs or outputs is connected to any voltage source; it is the user's responsibility to make those connections. A separately fused 5 volt and a separately fused 24 volt are available on the 50 pin connector in which all inputs and outputs are terminated.

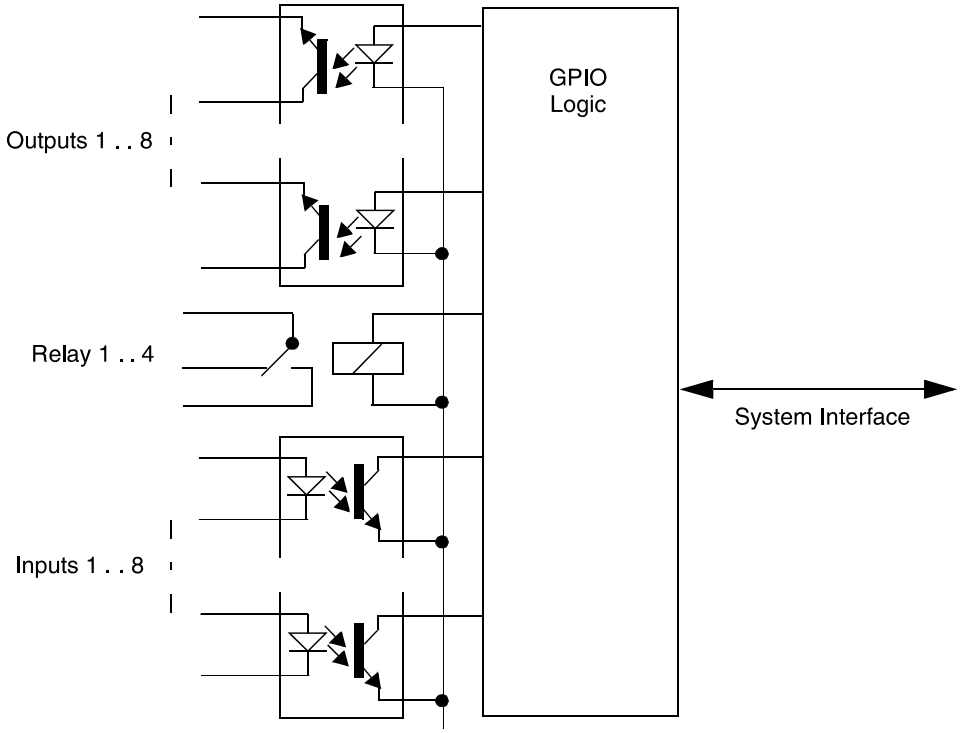



**Figure 179 GPIO Hardware**

# Overview

To launch the GPIO Configuration Manager, select **Applications ▶ GPIO Manager**.

The screen in Figure 180 displays. The fields on this screen are described in detail on the following pages.

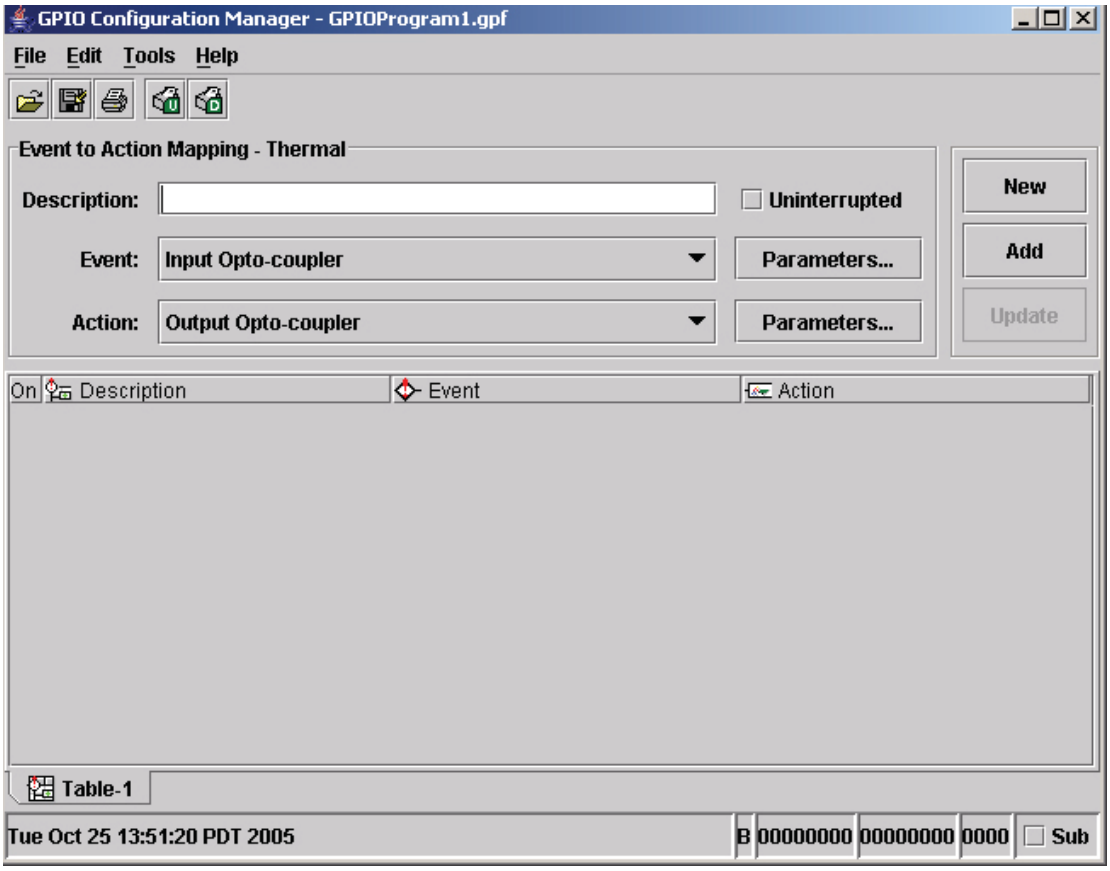



**Figure 180 The GPIO Configuration Manager**

## The Toolbar And Menus

The toolbars allow the handling of files and text.

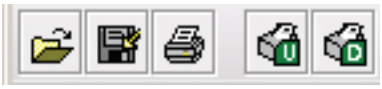


**Figure 181 The GPIO Configuration Manager Toolbar**

### File

The File menu allows you to create, open, reopen, save a new or existing GPIO program file, or print GPIO configurations.

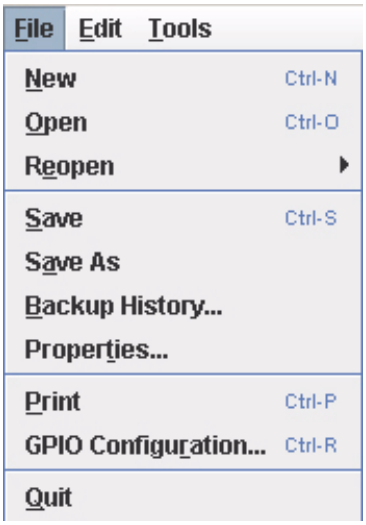



**Figure 182 The File Menu**

The Print option allows the mapping table to be printed for later reference. When you select **File ▶ Print**, the GPIO Print Setup dialog box opens allowing you to specify the desired print job. See Figure 183.

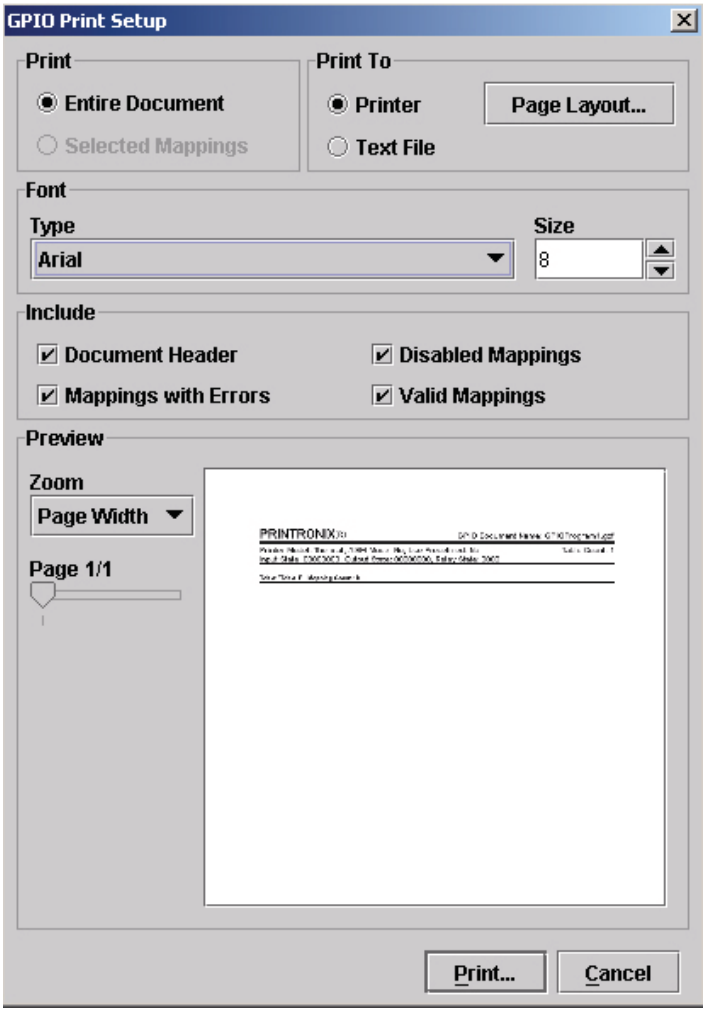



**Figure 183 The GPIO Print Setup Dialog Box**

When you select **File ▶ GPIO Configuration** the GPIO Configuration dialog box opens. This allows you to define the GPIO properties and power-up settings.

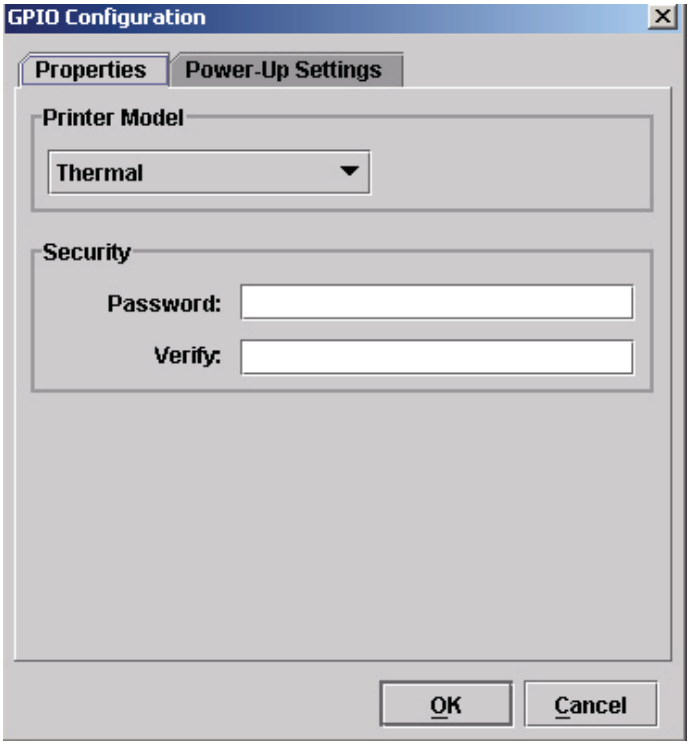



**Figure 184 The GPIO Configuration Dialog Box**

The Properties tab allows you to select the type of printer, either Thermal or Impact, for which the mapping table will be designed. For security, the password field allows you to password protect a mapping table.

**NOTE:** Password protected files can be uploaded to the GPIO manager but cannot be edited or downloaded to a printer without the password.

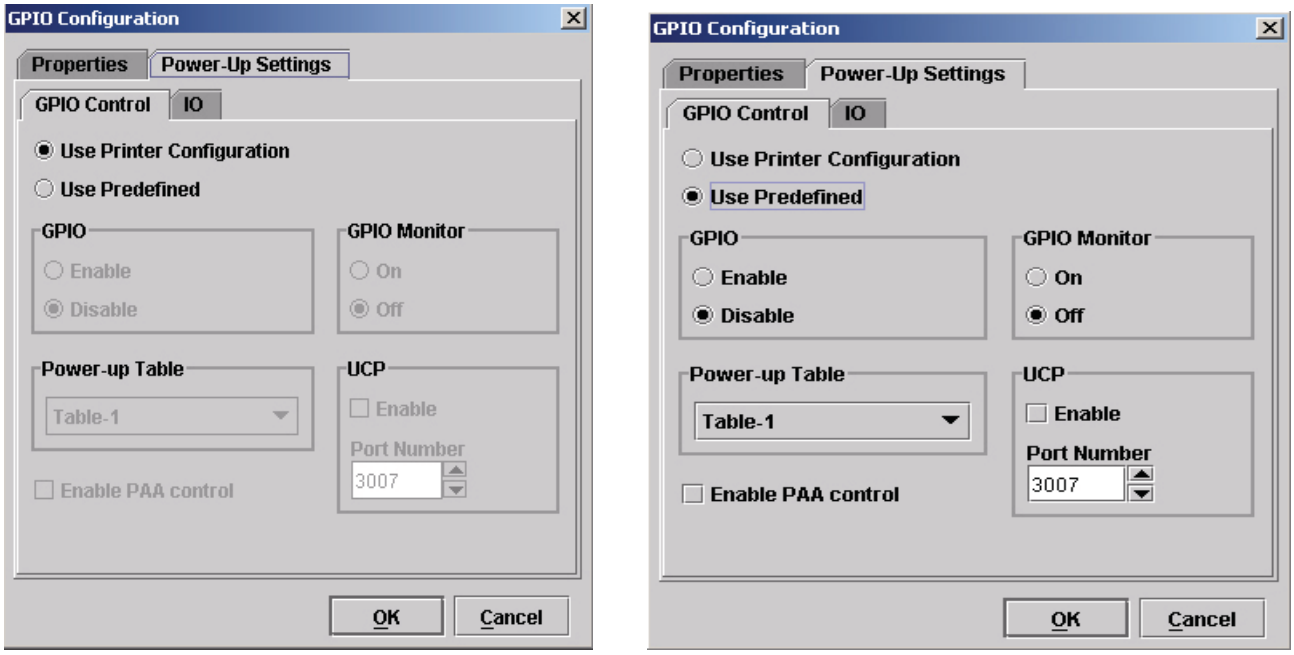



**Figure 185 Power-Up Settings – GPIO Control Tab**

Within the Power-Up Settings tab are two tabs, GPIO Control and IO.

**NOTE:** Settings made GPIO Control and IO predefining the output levels of GPIO will only be functional when the advanced GPIO features are enabled in the printer.

The GPIO Control tab allows the specification of the GPIO power-on configuration. This can be either the printer configuration or a predefined one. If “Use Printer Configuration” is selected, initial GPIO settings will be as specified in the Printer Power-On Configuration. See Figure 185.

If “Use Predefined” is selected, you can specify the following options:

- GPIO – Enable or disable the GPIO at power-on.
- GPIO Monitor – Switches the GPIO monitor on or off. The GPIO monitor is the reflection of the opto-coupler inputs in the lower line of the LCD.
- Power-Up Table – specifies the mapping table to use following power-on.
- UCP – Universal Control Port is an offline available TCP port. To enable the UCP port, check mark the Enable option.
- Enabling the UCP port disables the PXML port.
- Enable PAA Control – When enabled, PAA control matches from the active CST table is reported to GPIO by the Data Field Changed event. The predefined data field PAA State is used to generate the event. GPIO can check this data field for changes. See Data Field Events on page 215. PAA delays further data processing until GPIO acknowledges the event. GPIO acknowledges the event by setting the PAA State field to either NACK or ACK. When GPIO replies with NACK, PAA ignores the match and sends the data to the emulation it is bound to. When GPIO replies with ACK, PAA executes the match as defined in the CST.

**NOTE:** GPIO does not always acknowledge the PAA trigger. If you use this feature, make sure the event is always acknowledged.

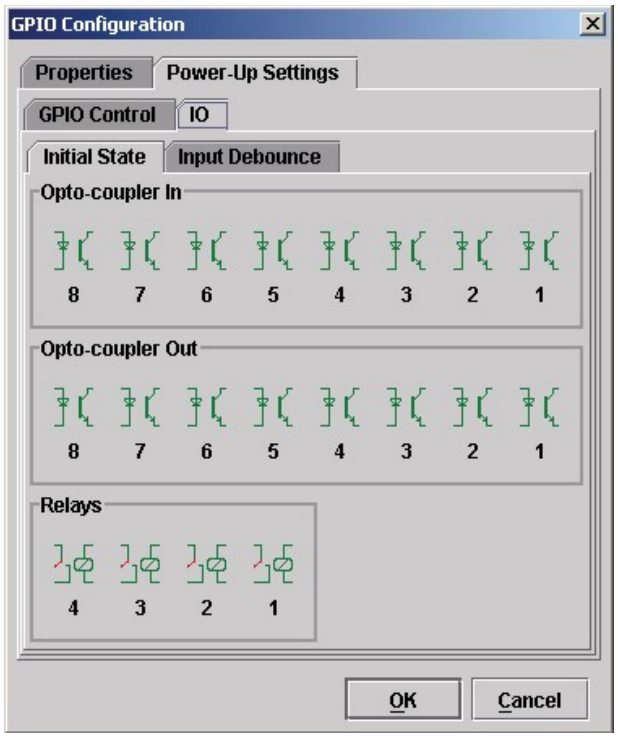



**Figure 186 Power-Up Configuration – IO Tab, Initial State**

The Power-Up Settings – IO tab contains two tabs, Initial State and Input Debounce.

**Initial State**

Divided into three sections, this panel is used to define the initial state of the GPIO board.

- **Opto-coupler In**

  This section has 8 icons, each representing a single input Opto-coupler. An active icon means that the Opto-coupler will be active when the printer is powered on. If an event is assigned to the Opto-coupler and its power up state does not match its initial state, the action mapped to the event will be performed at power up.

**NOTE:** This only applies to opto coupler events defined by the selected power-up table. Click the icon to toggle the state.

- **Opto-coupler Out**

  This section has 8 icons, each representing a single output Opto-coupler. An active icon means that the Opto-coupler will be active when the printer is powered on. Click the icon to toggle the state.

- **Relay**

  This section has 8 icons, each representing a single output relay. An active icon means that the relay will be active when the printer is powered on. Click the icon to toggle the state.

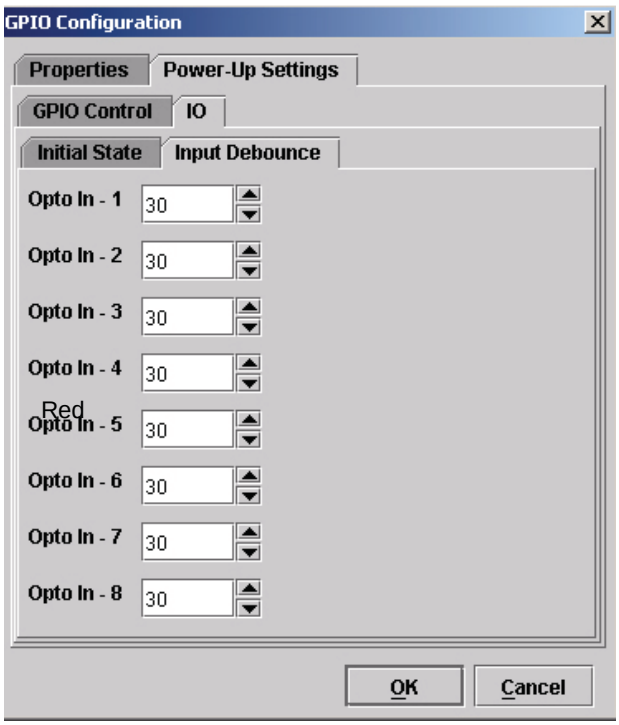



**Figure 187 Power-Up Configuration – IO Tab, Input Debounce**

### Input Debounce

When using mechanical switches it is possible that more than one event is generated due to multiple contact detections. The solution to this undesired effect is debouncing. Debouncing waits a specific amount of time after the first contact has been detected before responding to the next contact.

Printer firmware that supports debouncing will apply a 30ms default debounce time. However if this value is not enough for some mechanical and digital switches such as optical sensors, debouncing may not be needed.

You can change the 30ms default value by setting a debounce time for each input. Simply adjust the debounce time in steps of 1ms; a setting of 0 (zero) means that debounce will be disabled. The maximum debounce value 65535.

### Edit

The Edit menu allows you to define, delete, and rename mapping tables. You can also define data fields and reports to customize a mapping table. New mapping tables can be added to the tables that will be downloaded to the printer and existing mapping tables can be deleted or renamed.

**Figure 188 The Edit Menu**

### Tools

The Tools menu allows you upload a mapping table from the printer and to download a mapping table to the printer. You also have the option to select the last selected upload printer or the last selected download printer. This option allows you to quickly select a printer previously used for uploading or downloading without having to go to the RMS printer database for your selection.

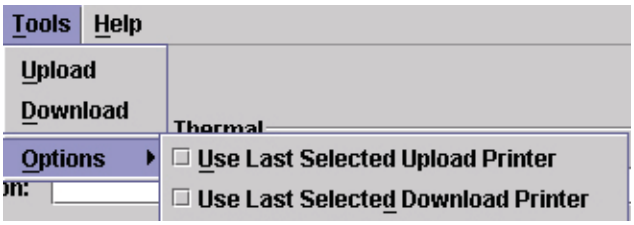



**Figure 189 The Tools Menu**

### Help

The About option provides basic information about the GPIO Configuration Manager as seen in the startup splash screen.

# Event To Action Mapping

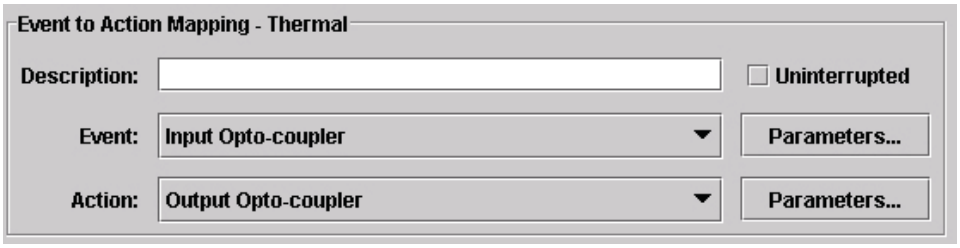



**Figure 190 Event To Action Mapping**

Setting the criteria for mapping tables takes place in the Event to Action Mapping section (see Figure 190). The Description field allows you can enter a descriptive name to indicate the use of the event and its related action.

**NOTE:** The window header indicates which printer type (thermal or line matrix) the mapping table is created for. Figure 190 indicates a Thermal printer.

The Event and Action drop down menus allow you to select an event and apply an action to the selected event. Table 9 on page 193 lists the events currently available in the software.

The Event Parameters button allows you to select additional conditions related to the event (Figure 191).

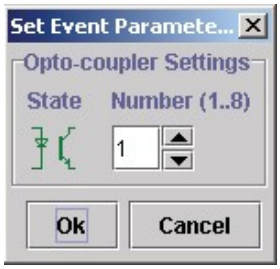



**Figure 191 Setting Event Parameters**

The Action drop down menu allows you to select the action that is to be taken on the specified event. Table 10 on page 202 lists the actions currently available in the software.

The Action Parameter button allows you to select additional conditions related to the action. Figure 192 displays parameters for the Output Opto-coupler and Output Relay actions.

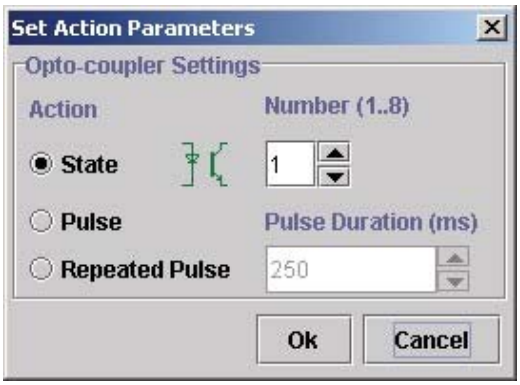



**Figure 192 Setting Action Parameters**

## Events

Table 9 lists the available events and the related parameters. Events parameters are available for the Input Opto-Couplers, Panel Key Pressed events, Printer Error and Warning events (including RFID and ODV related errors), and PAA events (related to Data fields and Timers).

**Table 9 Events And Parameters**

| Event Name | Description | Parameters | Security Key Required |
|---|---|---|---|
| Input Opto-Coupler | Events generated by the GPIO input Opto-Couplers. | Opto-Coupler Number (1..8), Active, Inactive | |
| **Status Events** | | | |
| Printer Powered Up | Events generated by the printer when the printer is powered on and ready to print. | None | |
| Printer Online | Event generated by the printer when the printer goes online. | None | |
| Printer Offline | Event generated by the printer when the printer goes offline. | None | |
| Printer Paused | Event generated by the printer when the printer enters Pause mode. | None | |
| Power Save Mode Entered | Event generated by the printer when the printer enters Power Save Mode. | None | |
| Power Save Mode Exited | Event generated by the printer when the printer exits Power Save Mode. | None | |

**Table 9 Events And Parameters**

| Event Name | Description | Parameters | Security Key Required |
|---|---|---|---|
| **Data Controller Events** | | | |
| Start Data Processing | Event generated by the printer when the printer starts processing data. | None | |
| End Data Processing | Event generated by the printer when the printer ends processing data. | None | |
| Printer Buffers Empty | Event generated by the printer when the printer buffers becomes empty. | None | |
| **Engine Controller Events** | | | |
| Single Label Printing, Enabled [1] | Event generated by the printer when single label printing is enabled. | None | ✓ |
| Single Page Printing, Enabled [2] | Event generated by the printer when single page printing is enabled. | None | ✓ |
| Single Label Printing, Disabled [1] | Event generated by the printer when continuous label printing is disabled. | None | ✓ |
| Single Page Printing, Disabled [2] | Event generated by the printer when continuous page printing is disabled. | None | ✓ |
| Label Pending [1] | Event generated by the printer when a label is waiting to be printed. | None | |
| Started Printing | Event generated by the printer when the printer starts printing. | None | |
| Label Printing | Even generated by the printer when a label is printing. | Normal, Overstrike RFID, Test, Overstrike ODV, Overstrike Manual | |
| Ended Printing | Event generated by the printer when the printing has ended. | None | |
| Started Paper Move | Event generated by the printer when the printer starts moving the paper. | None | |
| Label Printed [1] | Event generated by the printer when a label has printed. | Normal, Overstrike RFID, Test, Overstrike ODV, Overstrike Manual | |
| Overstrike Pending [1] | Event generated by the printer when a label overstrike is pending. | RFID, ODV, Manual | Only when parameter is ODV or Manual |
| Label Completed [1] | Event that is generated by the printer when a label is completed. | None | ✓ |

**Table 9 Events And Parameters**

| Event Name | Description | Parameters | Security Key Required |
|---|---|---|---|
| Label Rejected [1] | Event that is generated by the printer when a label is rejected. | None | ✓ |
| Label Canceled [1] | Event that is generated by the printer when a label is canceled. | None | ✓ |
| Label Failed | Event generated by the printer when a label failed to print. | None | ✓ |
| Label Present [1] | Event generated by the printer when the printer has a label printed and is waiting for the label to be taken. | None | |
| Label Taken [1] | Event generated by the printer when the label is taken. | None | |
| Page Printed [2] | Event is generated by the printer when a page is printed. | None | |
| Labels Pending, None | Event is generated by the printer when the printer has no more pending labels to be printed. | None | ✓ |
| End Paper Move | Event generated by the printer when the printer ends moving the printer. | None | |
| Cutter Cycled | Event generated by the printer when the cutter cycle is completed. | None | |
| Sensor Event | Event generated by the printer when the action to set the sensor to ignored on or off, either is executed or failed. | Sensor Type, Event Type | ✓ |
| **Errors/Warnings** | | | |
| Printer Error | Events generated by the printer when errors occur or are cleared. | Paper Jam, Paper Out/Empty, Ribbon out, Print Head Open, TOF Detect Fault, RFID Tag Failed, RFID Max Retry, Platen Open, Ribbon Stall, Stacker Fault, Stacker Full | |
| Printer Warning [1] | Events generated by the printer when warnings occur or are cleared. | Any Ribbon Low | |

**Table 9 Events And Parameters**

| Event Name | Description | Parameters | Security Key Required |
|---|---|---|---|
| **Panel/ODV Events** | | | |
| Panel Key | Event generated by the printer when the operator presses a key on the operator panel. | Key Combination | Security key is required when a key combination (more than one key) is selected. |
| | Event generated by the printer when the operator uses a key combination. | Key Combination | |
| ODV Status [1] | Event generated by the ODV (online data validator) of the printer. | Unscannable Code<br>Check Media,<br>Quality Error<br>All Error Cleared | |
| **Misc. Events** | | | |
| PAA Event | Event generated by PAA. | Event identifier | |
| Data Field Changed | Event generated when a data field has changed. | Source, Condition, Value, Type | ✓ |
| Timer Expired [3] | Event generated when a timer expires. | Timer Identifier | ✓ |
| Table Entered | Event generated when a table is entered or activated. This will be the first event generated when a table is activated with the exception of the power up event. | None | ✓ |
| Table Exited | Event generated when a table is exited, e.g. by selecting another table. It will be the last event generated before the table becomes inactive. | None | ✓ |
| UCP Data In | Event generated when the data received on the Universal Control Port (UCP) matches the data defined with the parameters of this event. Since this event requires that the UCP port be enabled, a warning dialog will display if this option is not enabled. This message will only be shown once for each GPF editing session. | Value | ✓ |

**Table 9 Events And Parameters**

| Event Name | Description | Parameters | Security Key Required |
|---|---|---|---|
| [1] Thermal only.<br>[2] Impact only.<br>[3] If instances of this object type are not defined, a dialog box asks you to define some. If you click Cancel, the event will revert to the previous selected event. | | | |

### Event Descriptions

- **Input Opto-Coupler**

  For external input signals you can specify the number of the opto-coupler to view and the level in which the event is seen as active. Click the opto-coupler symbol to select the active state.

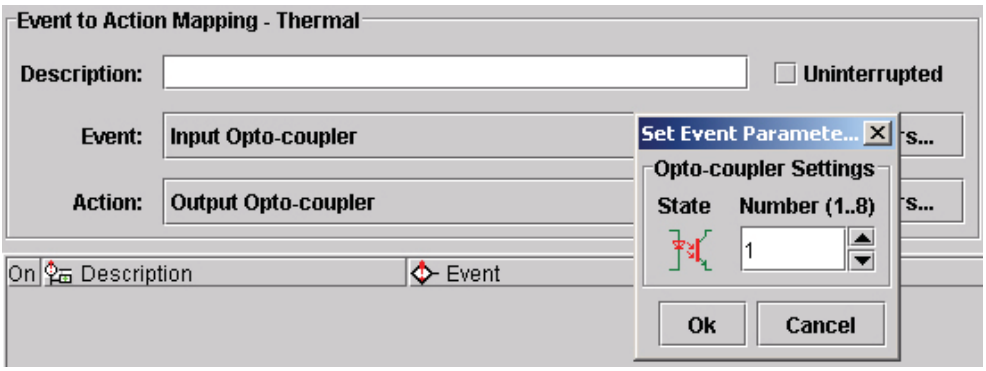



**Figure 193 Setting the Opto-coupler Number and State**

**NOTE:** With the advanced GPIO features enabled in the printer, it is possible to handle all eight opto-coupler input as a special Data Field (see Data Fields on page 212). This results in 248 different input combinations that can be used to trigger an action.

- **Printer Powered Up**

  This event is delayed until the moment the printer reaches the Powered- up-online or Powered-up-offline state. The delay is required so the printer can finish its power-on reset cycle before any reaction to an event generates.

**NOTE:** With the advanced GPIO features enabled in the printer, GPIO will either start up using the printer configuration or a predefined configuration. Select **File ▶ GPIO Configuration** then select the Power-Up Settings, GPIO Control tab to set the power-up option.

- **Printer Online**

  When the printer goes online by pressing the Pause key, the action related to this event is accepted.

- **Printer Offline**

  When the printer goes offline by pressing the Pause key or the menu key, or if there is any other reason that causes the printer to switch offline, the action related to this event is accepted.

- **Printer Paused**

  This event happens when the printer pauses because of the “pause printer” action. The printer accepts data from the host and parses this data until its buffers are full. No printing will take place. The print engine is offline but the printer’s data processing unit is still online.

- **Power Save Mode Entered**

  This event signals the moment when the printer enters Power Save Mode.

- **Power Save Mode Exited**

  This event signals when the printer becomes active again.

- **Start Data Processing**

  This event signals the start of the processing of received data. This is not the same as the Start Printing event.

- **End Data Processing**

  This event signals the end of the data processing cycle. This is not the same as the end printing event.

- **Printer Buffers Empty**

  This event takes place as soon as the print buffers are emptied.

- **Single Label Printing, Enabled**

  This event happens on the Enter Single Label Mode action. It indicates that this mode has been entered.

- **Single Label Printing Invoked**

  This event indicates that the Single Label Mode is terminated and that normal, continuous printing is active.

- **Label Pending**

  This event generates when the printer is in Local mode (i.e., the print engine is temporarily stopped) and all incoming data has been processed.

- **Started Printing**

  This event happens when the printer starts printing. The printer starts printing when all data processing is done, there is actual data to print, and the printer is no longer in local mode. The event will not happen on “paper moves without print.”

- **Label Printing**

  This event occurs when the label is printing.

- **Ended Printing**

  This event indicates the end of actual printing. The paper may still be moving as printing does not always stop at top of form.

- **Started Paper Move**

  This event indicates the beginning of the paper motion.

- **Label Printed**

  This event occurs when a number of labels stored in the printer have finished printing. If the labels print as a single job without any wait time, the event will be a short pulse. If the printer is placed in local mode and the labels are printed using the *print next label* action, the event will happen once for each label.

- **Overstrike Pending**

  The printer generates this event when a label overstrike is pending.

- **Label Completed**

  The printer generates this event when a label is completed.

- **Label Rejected**

  The printer generates this event when a label is rejected.

- **Label Canceled**

  The printer generates this event when a label is canceled.

- **Label Failed**

  The printer generates this event when a label fails to print.

- **Label Present**

  In label peel off applications, this event happens when the label present sensor detects a label in position (ready for application). It may be used to signal the availability of a label to an applicator system.

- **Label Taken**

  This event generates when the label is taken from its ready to apply position. It can be used to tell the host that a new label can be printed.

- **Labels Pending, None**

  The printer generates this event when it has no more pending labels to print.

- **End Paper Move**

  This event indicates the end of paper motion.

- **Cutter Cycled**

  The printer generates this event when the cutter cycle is completed.

- **Sensor Event**

  This event generates when the action to set the sensor to ignored on or off, either is executed or failed.

- **Printer Error/Printer Warning**

  The printer generates this event when errors or warnings occur or are cleared. You can select the actual error or warning as the event.

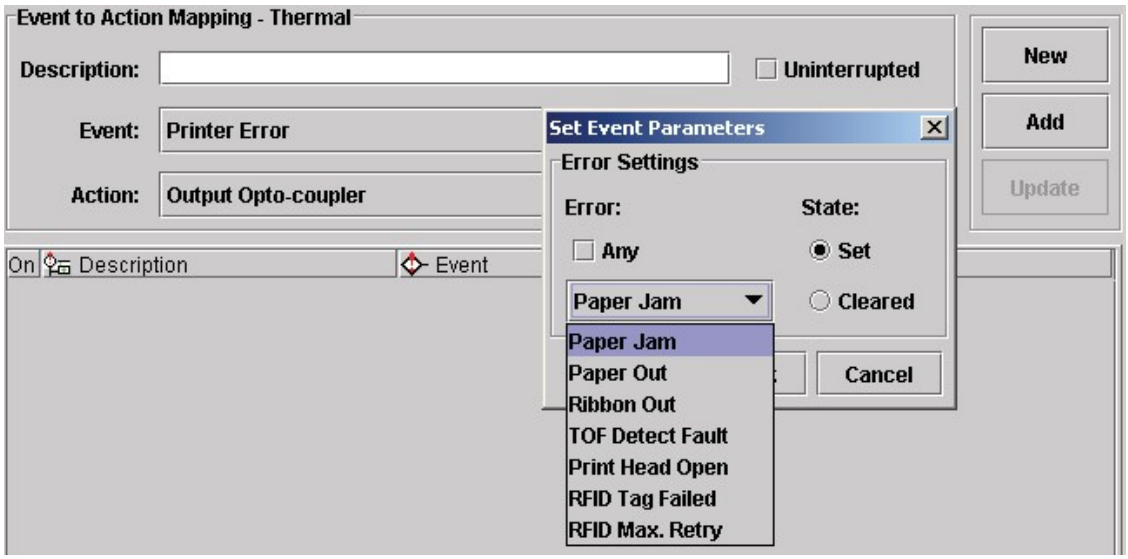



**Figure 194 Setting Event Parameters**

To select the Printer Error event, click the Event drop-down menu and select Printer Error as the event parameter. The Set Event Parameters dialog box opens. Click the Any box to uncheck the setting. A list of errors (or warnings) is now available for selection. From the Error drop-down menu, select the required parameter.

The Set state identifies the event when the problem happens. The Cleared state specifies the event when the problem is solved.

TOF Detect Fault happens if the T5000 does not find a Top of Form indicator (or a gap) within a specified amount of time after printing starts. It can be used to prevent the feeding of blank labels in print and apply applications.

- **Panel Key**

  This is an event in which the operator panel keys are parameters. The event allows you to change the function of the keys or to disable selective keys. For example, if the panel key event Menu results in the action Consume (or do nothing) the menu key has been disabled.

**NOTE:** When the advanced GPIO features are enabled in the printer, this allows an event to be generated when multiple keys are pressed simultaneously. Many additional key combinations can be used to trigger an action.

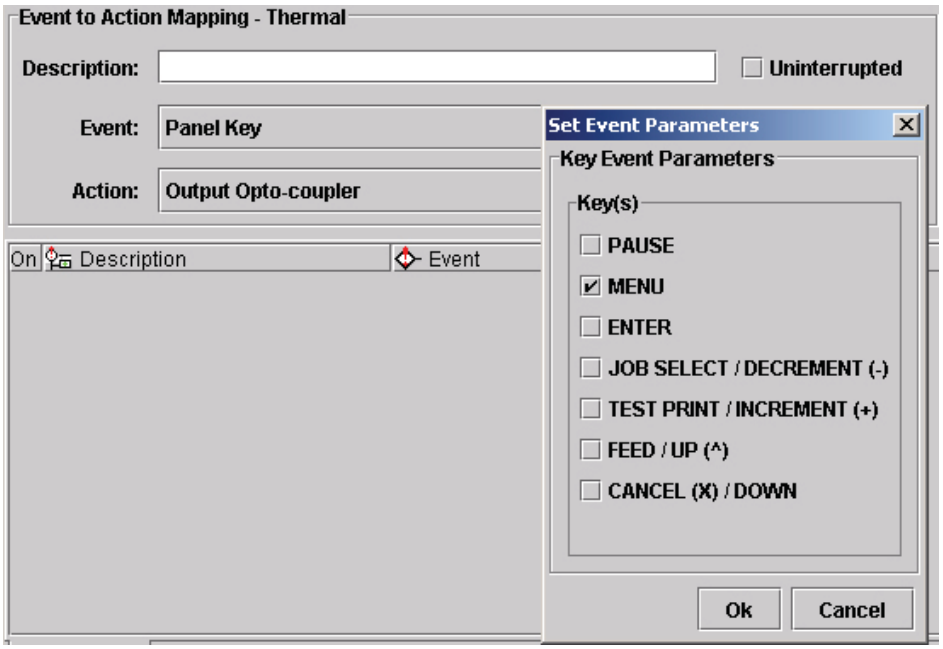



**Figure 195 Setting Panel Key Event Parameters**

- **ODV Status**

  This selection allows you to react to output from the ODV (online data validator). The parameters allow you to program GPIO to act if there is no barcode, if there is any or a specific error in the barcode, or when all ODV errors have been cleared.

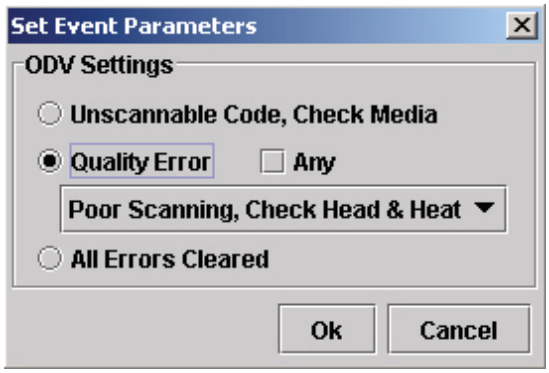



**Figure 196 Setting ODV Parameters**

- **PAA**

  PAA generates an event on a user specified input string. A large number (32000 or more) of PAA events can be generated through the use of an identifier.

- **Data Field Changed**

  This event happens if the value in a given data field changes. Certain conditions are applicable, see Data Fields on page 212.

- **Timer Expired**

  This event happens when a user defined timer expires or when a user defined time is reached. See Timers on page 225.

- **Table Entered**

  This event happens when a new mapping table is entered. The event can be used to execute actions regarding new tables. For example, when you want to check the content of a datafield and no other events are available.

- **Table Exited**

  This event generates before going to a new table. This event can also be used to execute last minute actions. For instance, if we want to go from table 1 to either table 2 or 3 and if a variable needs to be initialized, we could use the table exited event. This way we only have to specify the initial value once.

- **UCP Data In**

  This event generates when the data received on the Universal Control Port (UCP) matches the data defined with the parameters of this event. This event requires that the UCP port be enabled; a warning dialog will be shown if this option is not enabled. This message displays only once for each GPF editing session.

**NOTE:** The events Datafield Changed, Timer Expired, Table Entered, and Table Exited, and UPC Data In are only functional with the advanced GPIO features enabled in the printer.

## Actions

The Action field allows you to specify which action should be linked (or mapped) to the selected event. Table 10 lists all possible actions and related parameters.

**Table 10 Event Actions and Parameters**

| Action Name | Description | Parameters | Security Key Required |
|---|---|---|---|
| Output Opto-Coupler | Action that applies to the output Opto-Couplers. | State, Pulse, Repeated Pulse, Number (1..8), Pulse Duration (ms) | |
| Output Relay | Action that applies to the output relays. | Action, State, Pulse, Repeated Pulse, Number (1..4) | |
| **Printer Status** | | | |
| Printer Online | Action switches the printer to online mode. | None | |
| Printer Offline | Action switches the printer to offline mode. | None | |
| On/Offline Switch | Action toggles the printer between offline and online mode. | None | |

**Table 10 Event Actions and Parameters**

| Action Name | Description | Parameters | Security Key Required |
|---|---|---|---|
| **Data Control** | | | |
| Clear Buffer | Action clears all of the printer's internal buffers. Data stored in flash (e.g. form templates) are not cleared. | None | |
| **Engine Control** | | | |
| Pause Printing [1] | Action pauses printing after the current label is printed. Labels in the queue will stop printing until the start printing action is received. | None | |
| Resume Printing [1] | Action resumes printing if printing was stopped with the pause printing action. | None | |
| Print Next Label [1] | Action starts printing the next label in the queue if printing in single label printing mode. | None | |
| Reprint Next Page [2] | Action starts printing the next page in the queue if printing in single page printing mode. | None | |
| Reprint Last Printed Label [1] | Action reprints the last printed label. | None | |
| Form Feed | Action performs a form feed. | None | |
| Move Paper | Action moves the paper a specified distance in a specified direction. Use a data field to specify distance. | Distance to TOF, Direction Forward/ Backward | |
| Cut Once [1] | Action applies a paper cut if the cutter is installed. | None<br>**NOTE:** The Cut Once action is not executed if Media Handling is not set to Continuous or Cut. | |
| Flush Next Label [1] | Action deletes the next label in the print queue when in single label printing mode. | None | ✓ |
| Single Label Printing, Enable [1] | Action enables single label printing. | None | ✓ |

**Table 10 Event Actions and Parameters**

| Action Name | Description | Parameters | Security Key Required |
|---|---|---|---|
| Single Page Printing, Enable [2] | Action enables single page printing. | None | ✓ |
| Single Label Printing, Disable [1] | Action disables single page printing. | None | ✓ |
| Single Page Printing, Disable [2] | Action disables single page printing. | None | ✓ |
| RFID: Program Next Label [1] | Action puts the printer in continuous page printing mode. | None | ✓ |
| Sensor Action | Action turns the media sensor on or off. | Sensor, Action Ignore On/Off | ✓ |
| Power Save Action | Action turns power saving on or off and enters or exits power save mode. | On, Off, Enter, Exit | ✓ |
| Manual Overstrike | Action performs a manual overstrike. | None | ✓ |
| **Panel Control** | | | |
| Lock Panel | This action disables all the buttons on the operator panel. | None | |
| Unlock Panel | This action enables the buttons on the operator panel. | None | |
| Key Handling | This action is only enabled if the selected event is Panel Key. | Consume | ✓ |
| Beep | This action defines the number of times the buzzer beeps. | Beep Count | ✓ |
| Blink | This action changes the state of a printer's led or lamp. | State, LED/Lamp | ✓ |
| **General** | | | |
| Disable GPIO Events | This action prohibits the Event Parser from executing any actions except for the Enable Event Parser action. This allows an application to temporary disable the GPIO Event Parser. | None | |
| Enable GPIO Events | This action allows the Event Parser to start executing all actions again. | None | |

**Table 10 Event Actions and Parameters**

| Action Name | Description | Parameters | Security Key Required |
|---|---|---|---|
| Reply to Host | This action sends user defined data to the host. | Reply, Interface | |
| Wait | This action waits a specified time before the next action on the same event is performed. Use the data field to specify the time to wait. Only available if one of the numeric data fields is defined. | Time to Wait in milliseconds | |
| PAA Control: Reset CST | Time to wait in msThis action will reset the active CST. | None | ✓ |
| Select Mapping Table | This action allows the user to select the active mapping table. This action is only enabled if there is more than one mapping table. | Name of Table to switch to. | |
| Data Field | Performs an action on a user-defined data field. If no data fields are defined, the user is asked to define data fields first. | Destination, Operator, Source, Type | ✓ |
| Send Report [3] | This action allows the user to send a report to a destination. If no reports are defined, the user is asked to define reports first. | Source, Destination, Seconds | ✓ |
| Timers/RTC [3] | Performs an action on a user-defined timer. If no timers are defined, the user is asked to define timers first. | Timer, Action | ✓ |

[1] Thermal only.
[2] Impact only.
[3] If no instances of this object type are defined, the user is prompted to define the types now. If the user selects Cancel, the action will revert to the previous selected action.

**Action Descriptions**

- **Output Opto-Couplers**

  The opto-coupler number to activate can be specified as well as the level (or state) required for this output. Select the state by clicking the opto- coupler symbol. If the Pulse parameter is selected, the pulse duration can be set in increments of 50 msec between 50 and 2,147,483,647 msec. This allows pulses up to 24.8 days in duration. If Repeated Pulse is selected, the pulse will repeat with a 50% duty cycle until deactivated.

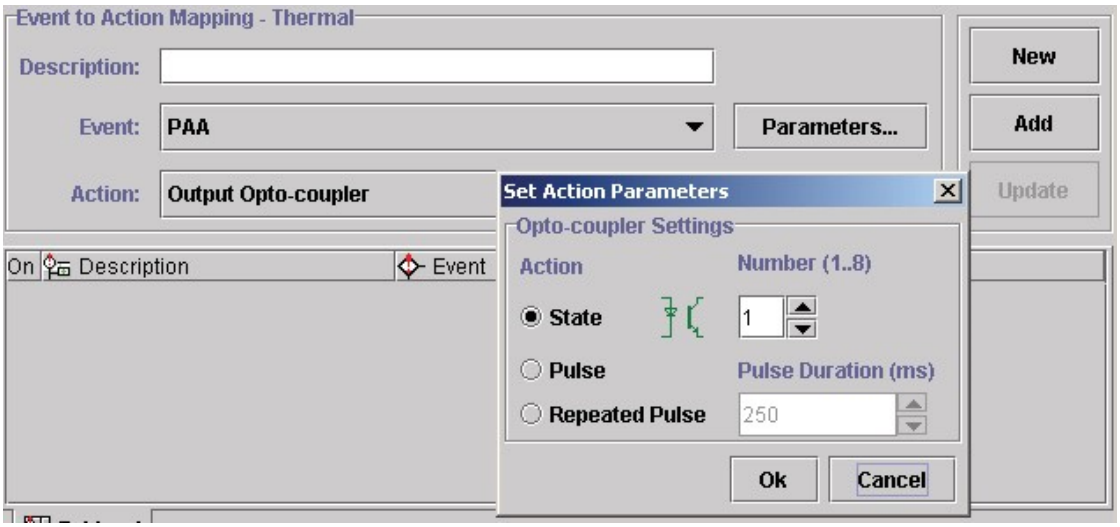



**Figure 197 Setting Output Opto-coupler Action Parameters**

- **Output Relay**

  The relay number to activate can be specified as well as the level (or state) required for this output. You can select the state by clicking the relay symbol. Pulsed behavior for the relays is equivalent to the pulsed behavior of the opto-coupled outputs.

**NOTE:** The advanced GPIO features enabled in the printer allow handling all eight opto-coupler outputs as well as the relays through a Data Field. See Data Fields on page 212. This gives the single outputs a large number of output combinations that can be used to initialize external actions.

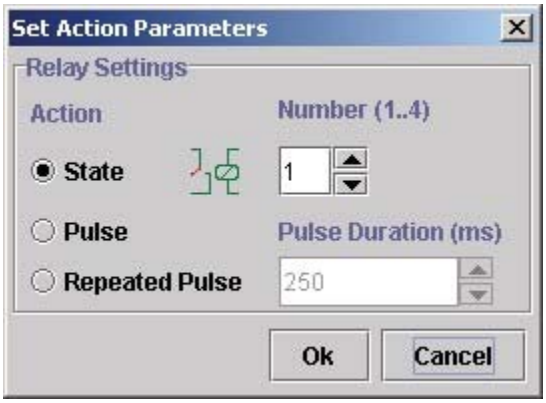



**Figure 198 Output Relay Settings**

- **Printer Offline/Printer Online**

  These two actions switch the printer offline or online.

- **On/Offline Switch**

  This action allows the printer to be switched offline if it is online, and to be switched online if it is offline. The switch works as a toggle.

- **Clear Buffer**

  A host or application controlled memory clear.

- **Pause Printing**

  This action results in the print engine going offline with the interface to the host still active. This allows receiving and pre-processing of host data until the buffer is full.

- **Resume Printing**

  If there is data in the buffer, the printer resumes printing until it is switched offline or paused through the Pause Printing action.

- **Print Next Label**

  This action can have different functions. If GPIO Print & Apply is enabled, the action is Print Next RFID Label. In Single Label Printing Mode, the action is Print Next Label. If the user switches the printer to Pause mode without going into Single Label Printing Mode, the Print Next Label also functions similar to the previous version of GPIO.

**IMPORTANT** **Do not place the printer in Pause mode and select the Single Label Printing Mode, this stops the engine and prevents the printer from printing.**

- **Reprint Last Printed Label**

  This action reprints the last page printed.

- **Form Feed**

  This action performs a form feed.

- **Move Paper**

  This action allows the movement of paper either to the next top-of-form (the gap) or, if required for specific applicator functions, a specified distance forward or backward. See Figure 199.

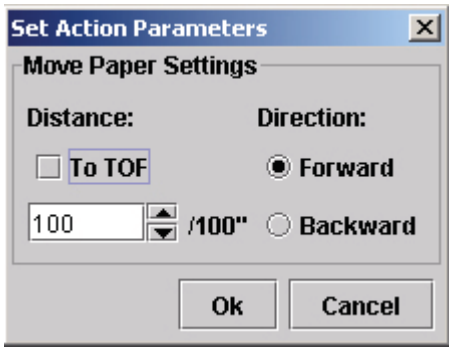



**Figure 199 Setting Move Paper Action Parameters**

- **Cut Once**

  Cuts the media in the current position.

- **Flush Next Label**

  This action removes a single form (the one that is ready to be printed) from the queue in the printer. It can be used in Secure Printing configurations where two printers are interconnected through GPIO and one printer is ready to take over printing if the first printer develops a problem.

- **Single Label Printing, Enable**

  This action prints one label at a time.

- **Single Label Printing, Disable**

  This action disables single page printing.

- **RFID: Program Next Label**

  This action is specifically designed for RFID Print and Apply applications where the programming of the RFID tag in the label does not have to occur simultaneously with the printing of the actual text on the label.

- **Sensor Action**

  This action turns the media sensor on or off. See Figure 200.

**Figure 200 Setting Sensor Action Parameters**

- **Lock Operator Panel / Unlock Operator Panel**

  Once executed, the operator panel will be locked or unlocked. When locked, the operator panel can still be accessed through the virtual operator panel of PNE. If the Disable Event Parser has been executed, the operator panel will be unlocked.

- **Key Handling**

  This action allows the user to specify how the actual Key Event should be handled. Selecting *Consume* results in the original key function not being executed (it is consumed by GPIO).

- **Beep and Blink**

  These actions allow the beeper to beep a specified number of times. The Online lamp on the printer switches on, off or blinks at the normal printer controlled rate.

- **Enable GPIO Events/Disable GPIO Events**

  These actions allow you to switch on or off the event parsing of GPIO. When disabled, the only action GPIO will execute is the enable event parser action.

- **Reply to Host**

  The Reply to Host action allows the user to specify a data stream that will transmit to the host when the selected event takes place and to select the interface that should be used for this data transmission. Data entry can be in ASCII or in hexadecimal. The entry mode can be selected with the arrow keys: up arrow for ASCII entry mode and down arrow for Hex entry mode. See Figure 201.

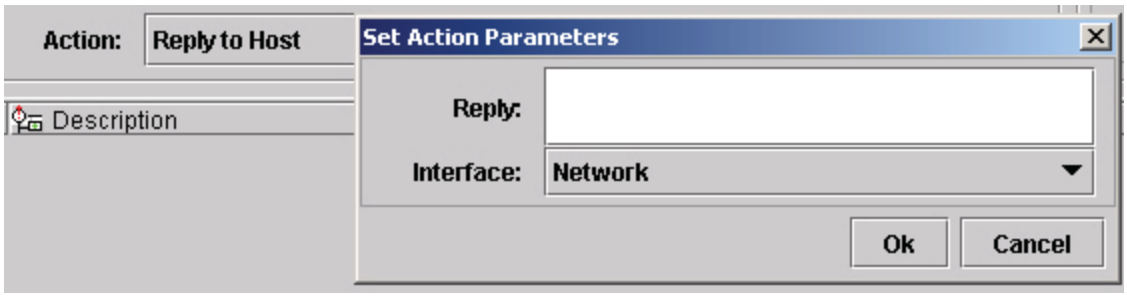



**Figure 201 Setting Reply to Host Action Parameters**

- **Wait**

  The parameter for this action specifies the time in 1/1000 seconds that GPIO will wait until the next action executes.

- **PAA Control: CST Reset**

  This action resets the Use Once flags of the currently active PAA CST.

- **Select Mapping Table**

  This action allows you to select one out of 64 mapping tables on a given event. If only a single mapping table has been defined, this selection is not available. The mapping table is selected by its name or by selecting *previous*. Selecting *previous* allows you to quickly return to the table previously active. The nesting of returns is allowed.

- **Data Field**

  This action allows you to modify the data field on a given event. Several logical or arithmetical functions can be applied to the data in the data field. See Data Fields on page 212.

- **Send Report**

  This action transmits a report to either the host computer through a selected interface or to the printer operator panel LCD. For the LCD you can select the upper or lower display line and the time the message will be visible. See Reports on page 218.

- **Timer**

  This action allows the start and stop of timers. This can either be for a single delay time or be based on the Real Time Clock (battery backed-up or CPU). See Timers on page 225.

**NOTE:** The actions Select Mapping Table, Data Field, Send Report, Beep and Blink, and Timer is only available with the advanced GPIO features enabled in the printer.

# Event to Action Mapping Buttons

The mapping table control buttons are used as follows:

- **New**. Clears the Name field and sets the Event, Action, and related parameters to default.
- **Add**. Adds a new Event-to-Action mapping to the current GPIO program.
- **Update**. Re-enters an Event-to-Action mapping after editing.

Click the buttons to copy an entry from the mapping table to the entry/edit fields for subsequent modification. Click the Update button to update the entry in the mapping table with the new data.

**Figure 202 Event to Action Mapping Entry Control Buttons**

The Uninterrupted check box is used to allow GPIO to finish an action without being interrupted. For instance, if an event results in a timer action the timer may be required to expire completely before another action is performed. Events happening during this uninterrupted time will be queued and reacted upon once the uninterruptable action is complete.

**NOTE:** The queued events will be acted upon directly and in sequence. Any timing will be lost.

## Multiple Actions

If required, GPIO can execute a number of actions on a single event. Multiple actions specified for a single event will be executed in the order they are entered in the mapping table.

Figure 203 shows a mapping table where the first action is to enable GPIO events by making the Input Opto-coupler event active. The second action is to disable GPIO events by making the Input Opto-coupler event inactive. The third action is to perform a form feed. Since the GPIO Configuration Manager performs mappings in sequence, this program will not produce a clean sheet because the Form Feed action follows the GPIO disable command. A form feed cannot happen when all GPIO events are disabled first.

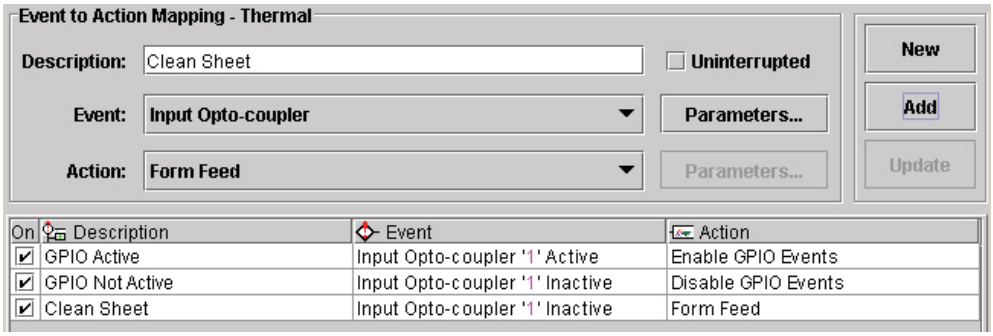



**Figure 203 Incorrect Setup of Multiple Actions**

Figure 204 shows a correct mapping table; a form feed is executed before the actual disabling of GPIO.

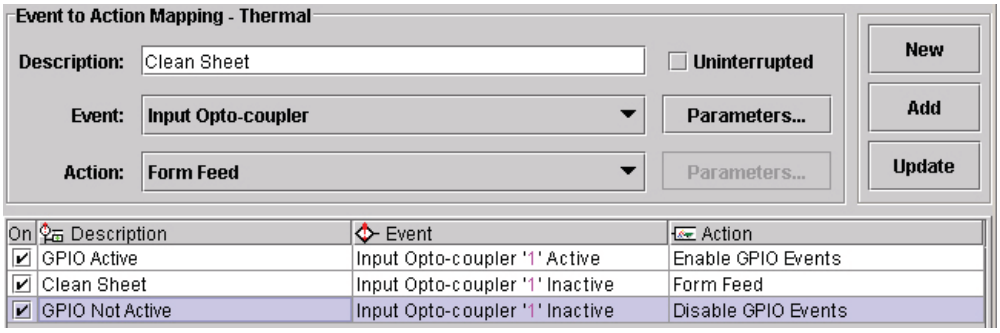



**Figure 204 Correct Setup of Multiple Actions**

To change the sequence in which the entries appear in the table, click and drag the entry to a different location in the table.

## The ON Flag

You can use the On flag to temporarily disable entries in the GPIO mapping table. This is useful if an extensive mapping table is generated with many events leading to the same action. The On flag allows you to test each event reaction separately.

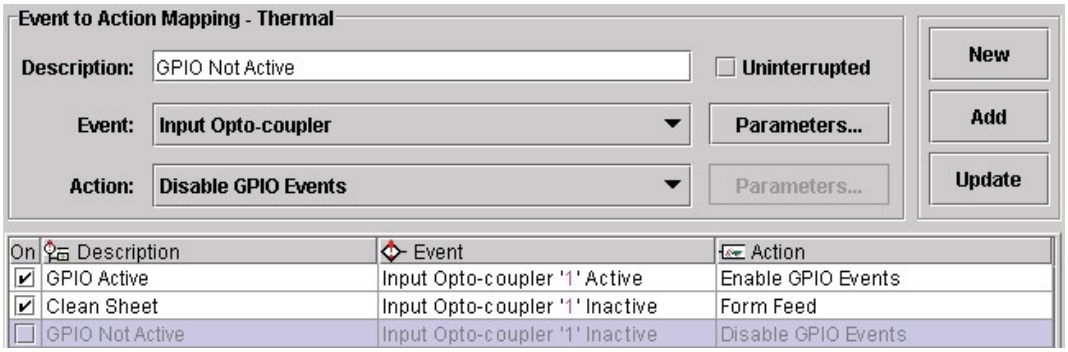



**Figure 205 Using the On Flag to Enable or Disable an Action**

## The Status Line

The status line displays information related to GPIO. The tabs marked Table-1 and Table-2 allow selection of different event to action mappings. With the advanced GPIO features enabled, it is possible to select up to 64 tables. With the advanced GPIO features disabled, only a single table is available.

**Figure 206 Viewing Status Line Information**

The status line displays the date and time as well as the type of GPIO features used in the table. The ‘A’ indicates that at least one advanced GPIO feature is present. To run the mapping table in the printer the advanced GPIO features need to be enabled by the security key. Tables using only basic features do not require the security key to be loaded to the printer.

The series of zeros (or ones) are a reflection of the initial input and output states defined during the GPIO configuration. The first set of eight zeros represent the initial input opto-coupler state, the second set of eight zeros represent the initial output opto-coupler state, and the last set of four zeros represent the relays.

The Sub check box needs to be checked if a GPIO mapping table is to be used as a subroutine. A table marked Sub will put the name of the table from which the selection is done on the stack. This name is used when the “select previous table” action is done to select the correct table to return to.

# Data Fields

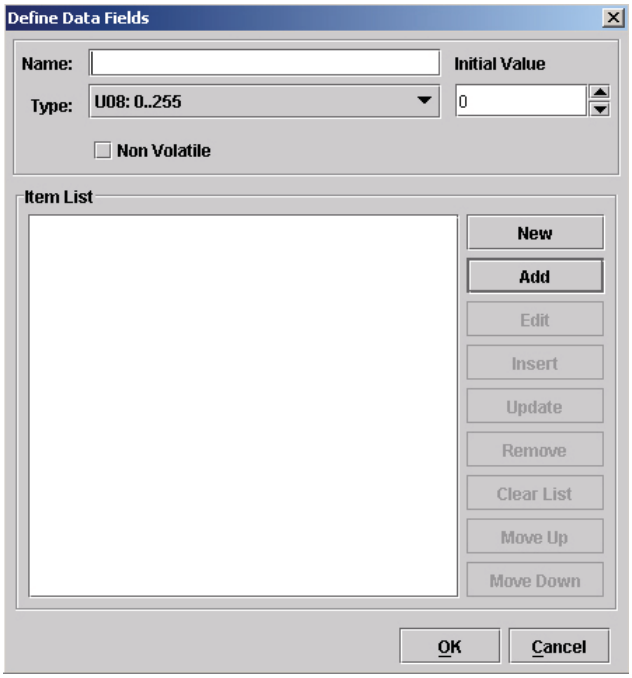



**Figure 207 The Define Data Fields Dialog Box**

Data fields are storage locations in the printer's resident memory. To define a data field, select **Edit ▶ Define Data Fields**. The Define Data Fields dialog box opens (Figure 207).

The Name field allows the user to create a data field descriptive to the user's needs. The Type drop down menu allows you to choose one of seven different types of data including 8, 16, or 32 bit signed or unsigned values and a string value. The Initial Value field allows you to set an initial value for the data type specified.

Checking the Non Volatile check box specifies that if a value in the data field has changed during the operation of the printer and the printer is powered down, the latest value of the data field will be the initial value when the printer is powered on. For example, if the data field contains a label count of 10,000 and that after printing 1,200 forms the printer is turned off due to error, with Non Volatile selected, the printer prints another 8,800 forms when the printer goes online again. If Non Volatile is not selected, the printer will print another 10,000 forms.

## Data Field Actions

Data Field Actions are used to modify the content of the Data Field which results in an event.

An example is provided to better understand how Data Field Actions work in correlation to Data Field Events. For this example, we have a printer with a forms count defined in a data field in which after each form prints, the count is updated to reflect the correct number of forms still to be printed. Once the count reaches zero, we want a message to display in the second line of the operator panel. To do this, we need to define a Data Field and enter the total forms count (Figure 208).

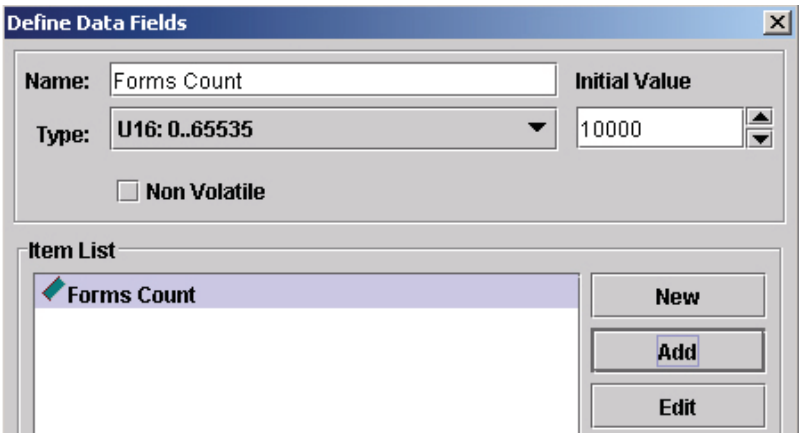



**Figure 208 Defining Data Fields**

1. Select Edit ▶ Define Data Fields.
2. Enter a descriptive name in the **Name** field.
3. Select the Data Field Type and enter the Initial Value.

   The data field type can be signed or unsigned bytes (-128..+127 and 0..255), signed and unsigned words (-32768..+32767), signed and unsigned long words (-2147483648..+ 2147483647), and ASCII strings.
4. Click **Add** to add the data field to the item list.

Once the data field is defined and added to the list, make sure that the count decrements by one each time a form prints. To set the parameters, use the Label Printed event and the Data Field action. In the Data Field parameter block specify what you want to happen when the event Label Printed occurs.

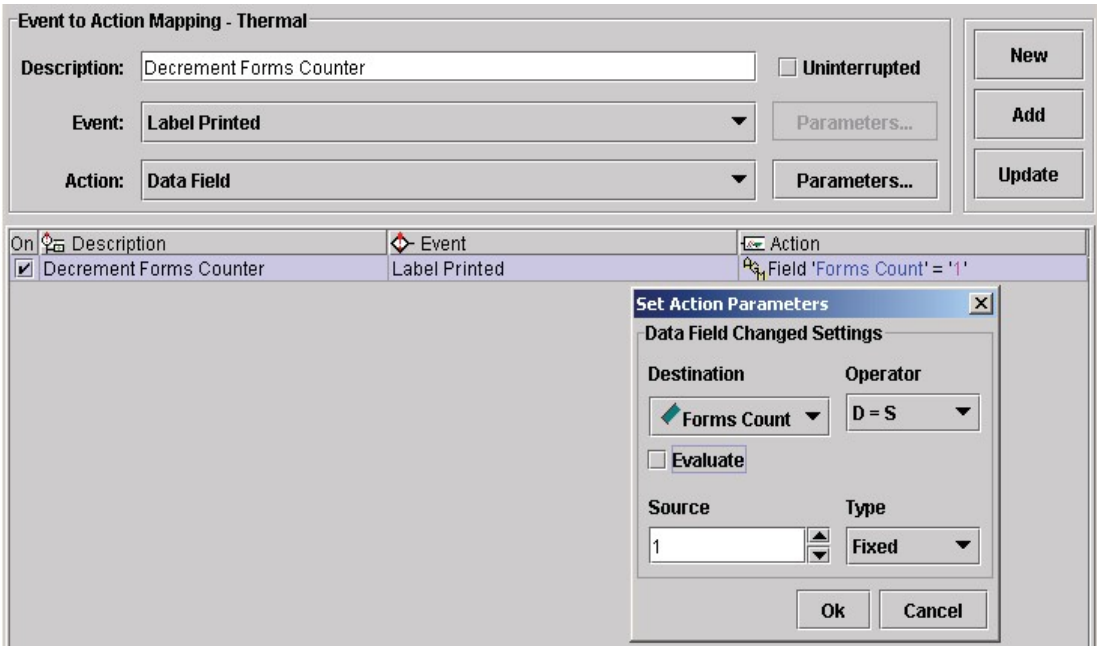



**Figure 209 Setting Action Parameters**

There may be an instance where you want to indicate an exact operation to perform on the Data Field. To decrement the label count by one each time a form prints, specify this event to happen in the Data Field parameter block when a label printing occurs. The value in the Source field will be used during the operation on the Data Field. To decrement the forms count by one for each label printed, set the Source value to 1. If more Data Fields are defined, one of those could be used as the Source value. To select the Source type, click the Type drop down menu and select Fixed or another defined data field. Operator Data Field Settings are defined in Table 11.

**Table 11 Operator Data Field Setting**

| Operator | Results |
|---|---|
| D = S | Destination becomes Source |
| D = D + S | Destination ‘plus’ Source |
| D = D - S | Destination ‘minus’ Source |
| D = D * S | Destination ‘times’ Source |
| D = D / S | Destination ‘divided by’ Source |
| D = D % S | Destination ‘mod’ Source |
| D = D \| S | Destination ‘Logical OR’ with Source |
| D = D & S | Destination ‘Logical AND’ with Source |
| D = D ^ S | Destination ‘Logical EXOR’ with Source |
| D = D &~ S | Destination ‘Logical AND’ with ‘Inverted’ Source |
| D = ~ S | Destination becomes ‘Inverted’ Source |
| D = D >> S | Destination ‘Logical Shift Right’ Source times |
| D = D << S | Destination ‘Logical Shift Left’ Source times |

First specify the data field itself, in this case a single (U16 Forms Count). If there are numerous data fields, select the one in which the action should apply. Next we need to set the operators to indicate the event we want to happen to this data field. The Source field sets the value in which we want the data field count to decrement by.

**NOTE:** When it is necessary to check/validate the value of a data field on a certain event, the user has to map a “Data Field” action to the event and check the “Evaluate” option. This will generate a “Data Field Changed” event similar to when the data field actually changes.

For this example, use D = D - S (Figure 210) which results in the mapping table entry as seen in Figure 211.

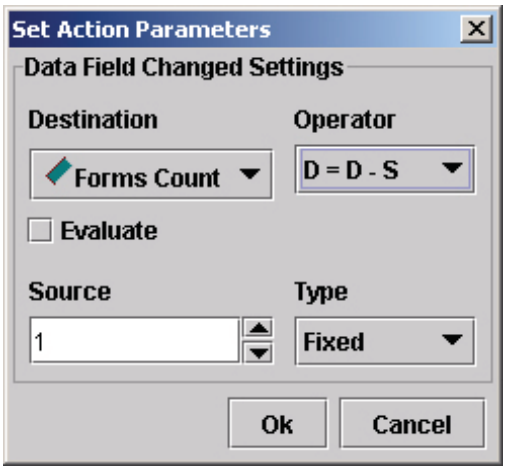



**Figure 210 Setting Operator Parameters for a Data Field**

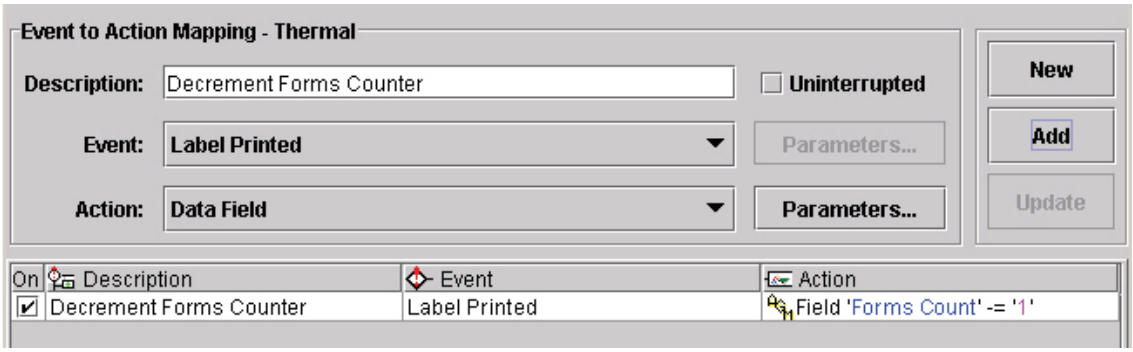



**Figure 211 Generating a Mapping Table Entry**

Now each time a label or form prints, the value in the data field forms count decrements by one. Next make sure that when the last form prints, a message is sent to the operator panel display as defined by setting a data field event.

## Data Field Events

To have a message sent to the operator panel display indicating the number of forms still to be printed, you will need to keep track of the forms count. For this example create a new entry in the table named “Update LCD: Printing”. Use Data Field Changed as the event. Each time the data field changes, a specific event generates.

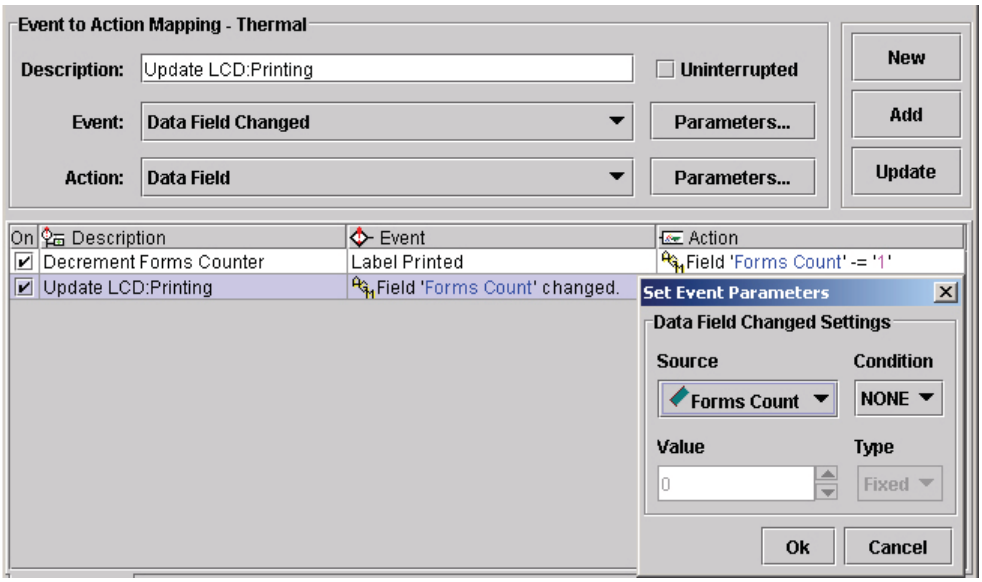



**Figure 212 Creating a Event to Action Mapping Entry**

1. Enter **Update LCD:Printing** in the Description field to create a new table entry.
2. Select **Data Field Changed** as the event. The Set Event Parameters dialog box opens.

The Source drop down menu is the data field for which the event is active. The Value field allows you to specify the number you want the Source to be compared. The Condition field indicates when exactly the related action takes place.

The following conditions are available:

**Table 12 Conditions and Actions**

| Condition | |
|---|---|
| None | No condition, action taken on each change of Source (data field) |
| = = | 'Equal' – action taken if Source equals Value |
| ! = | 'Unequal' – action taken if Source and Value are different |
| < | 'Smaller Than' – action taken if Source is smaller than Value |
| < = | 'Smaller Than or Equal To' – action taken if Source is smaller than or equal to Value |
| > | 'Larger Than' – action taken if Source is larger than Value |
| > = | 'Larger Than or Equal To' – action taken if Source is larger than or equal to Value |

To set a forms counter, create two programmed entries,

**Update LCD:Printing** and **Update LCD:Done.**

- Update LCD:Printing

  In the event that there is an unconditional change to the forms count, **Label Countdown** displays in the second line of the LCD.

- Update LCD:Done

  In the event that the forms count reaches zero, the message **Label Printing Done** displays in the second line of the LCD.

- Ready Signal

  In the event that the forms count reaches zero, the printer will beep five times.

**NOTE:** When it is necessary to check/validate the value of a data field on a certain event, the user has to map a “Data Field” action to the event and check the “Evaluate” option. This will generate a “Data Field Changed” event similar to when the data field actually changes.

The resulting mapping table in Figure 213 allows you to keep track of printed labels.

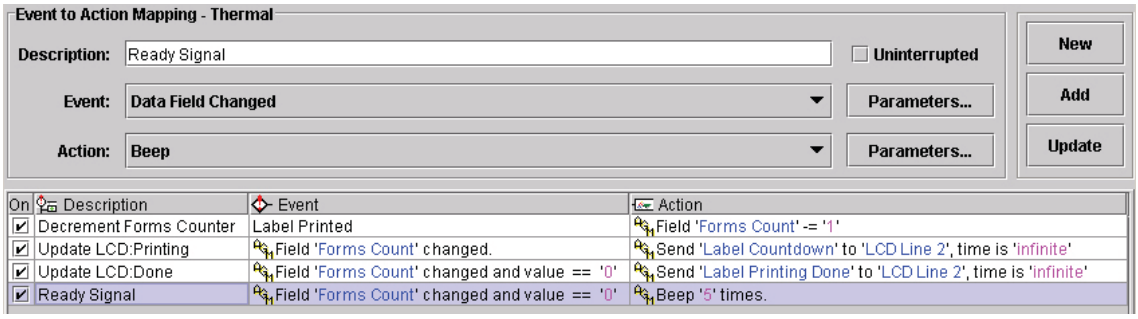



**Figure 213 Creating a Forms Counter Entry**

# Reports

Reports are messages that can be sent to a number of destinations in the printer. A report is created by specifying one or more sections and by indicating the sequence in which these sections should be combined to form the report. Depending on the destination it may be required to indicate how long the report will be active.

**Figure 214 The Define Reports Dialog Box**

## Defining Reports

Continuing with the previous example, we want to receive a message on the operator panel LCD that all forms have been printed.

To define a report do the following:

1. Select **Edit ▶ Define Reports**. The Define Reports dialog box opens with the Report tab active (Figure 214). Two tabs are available, the Report and Sections tabs.

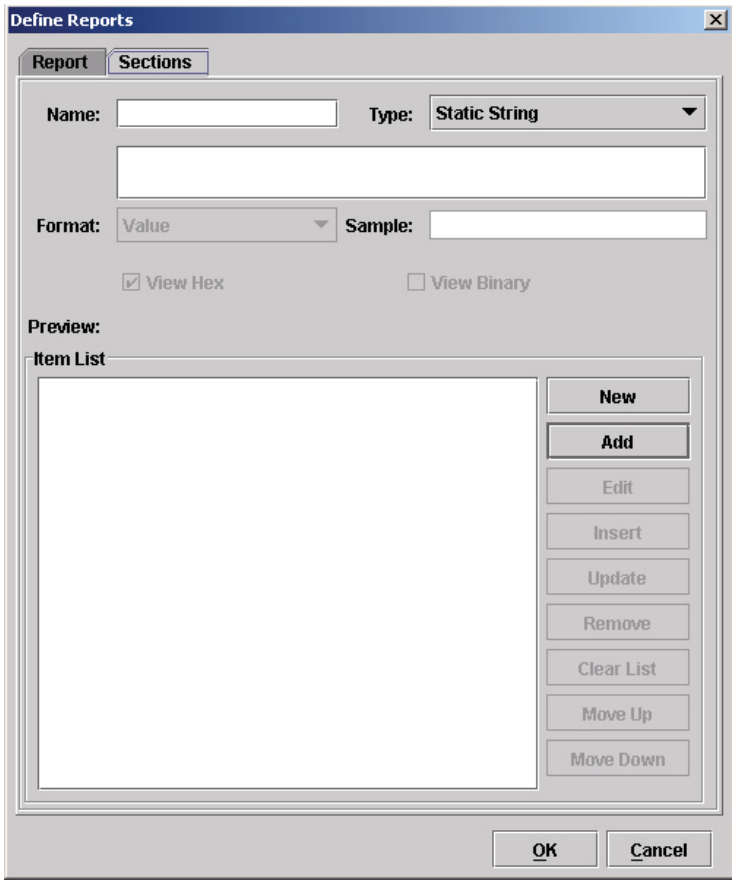



**Figure 215 The Sections Tab of the Define Reports Dialog Box**

2. Click the **Sections** tab (Figure 215). We will use this tab to define all sections needed to make the full report. The printer operator panel LCD is has a maximum of 16 characters available per line to display the message.

## Creating Sections

In continuing with the example, let us define the message as 'ALL DONE [xxxxx] where xxxxx represents the remaining count. This divides the report in four sections:

- **# OF LABELS** is the header section during printing
- **ALL DONE [** is the header used when all printing is done
- **xxxxx** is the forms counter data field content
- **]** ends the section.

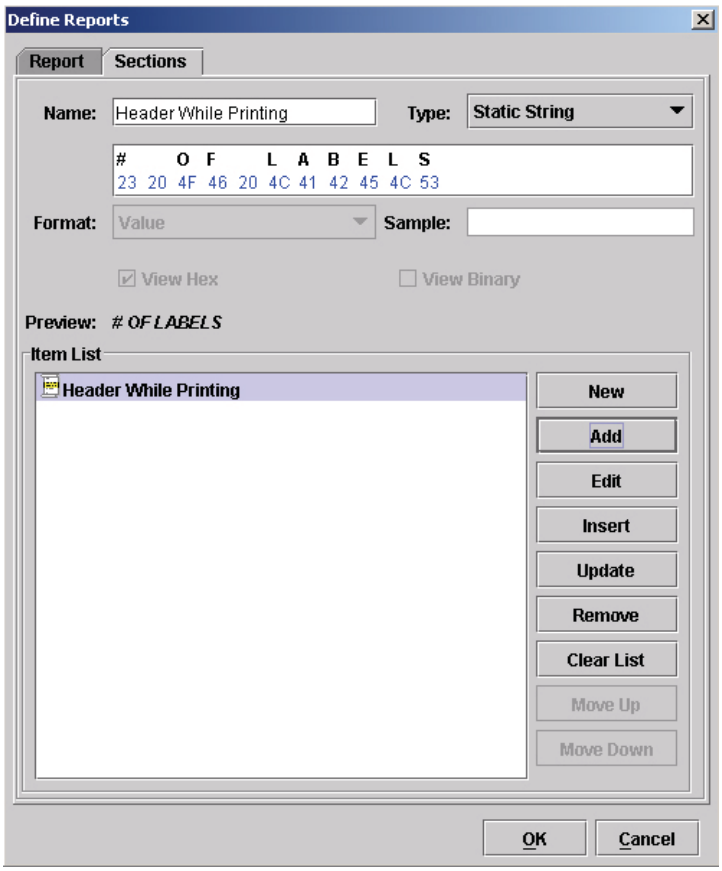



**Figure 216 Defining a Sections Name**

1. Type **Header While Printing** in the Name field.
2. Select **Static String** in the **Type** drop down menu.
3. Type **# OF LABELS** in the data pane.
4. Click **Add**. The Header section is added to the Item List pane (Figure 216).
5. Click the **New** button and type **Header When Done Printing** in the Name field to define a second section.
6. Select **Static String** in the **Type** drop down menu.
7. Type **ALL DONE [** in the data pane.
8. Click **Add**. The Header When Done Printing section is added to the Item List pane.
9. Click the **New** button and type **Forms Count** in the Name field to define a third section.
10. Select **Data Field** in the **Type** drop down menu.
11. Select **Value** as the Format.
12. Click **Add**. The Forms Count section is added to the Item List pane.

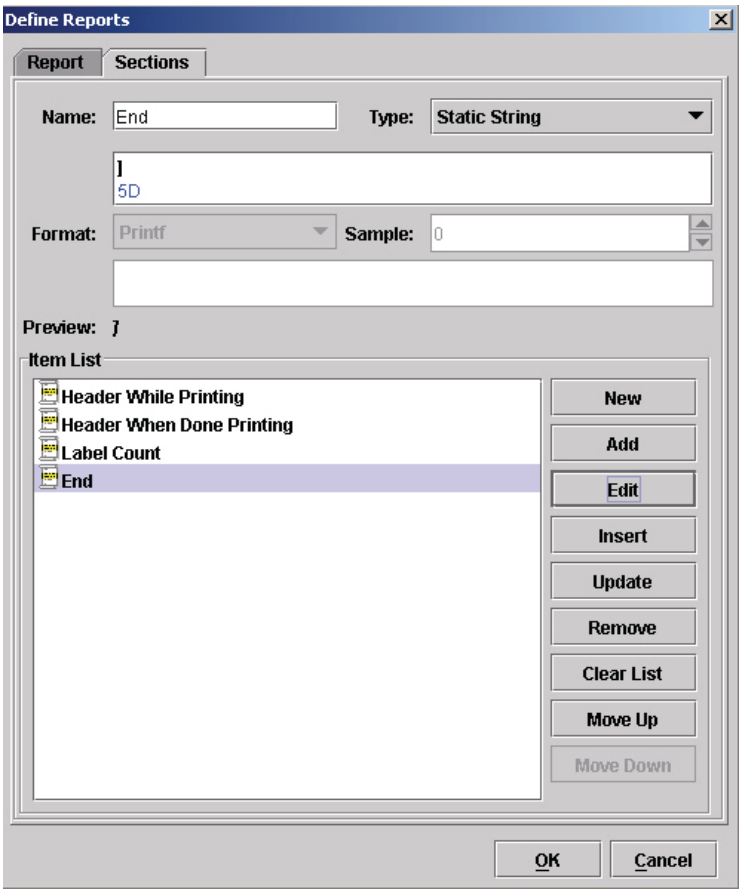



**Figure 217 Creating a Sections Item List**

13. Click the **New** button and type **End** in the Name field to define a fourth section.
14. Select **Static String** in the Type drop down menu.
15. Type **]** in the data pane.
16. Click **Add**. The End section is added to the Item List pane (Figure 217).

## Creating Reports

We want to generate two reports using the sections just created. One report to generate during printing and the other to generate after printing is complete.

The first report, Label Count, is created with two sections: Header While Printing and Forms Count. This will give the following text on the LCD: # of Labels xxxx, where xxxx is the remaining label count.

The second report, Label Printing Done, is created with three sections: Header When Done Printing, Forms Count, and End. This will give the following text on the LCD: ALL DONE [xxxx] where xxxx is the remaining label count.

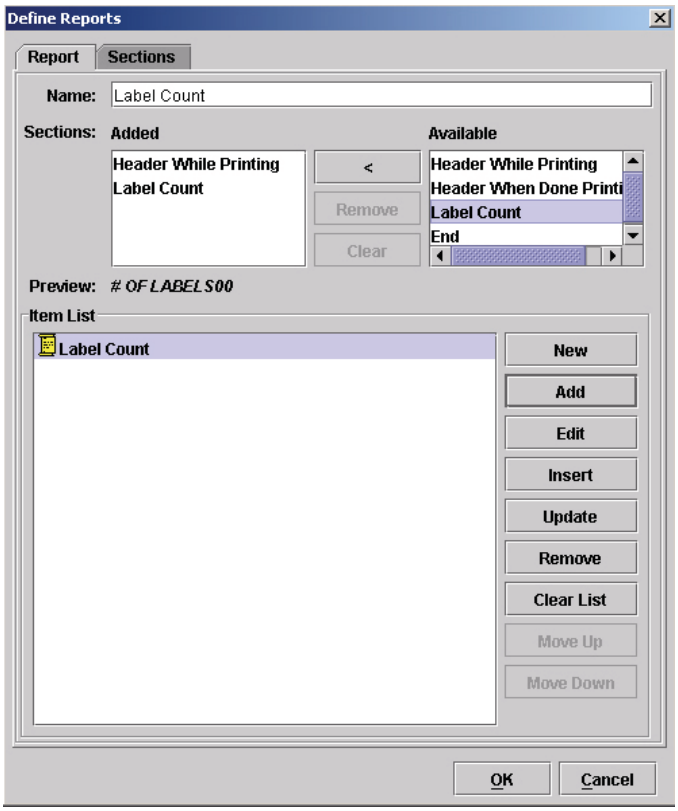



**Figure 218 Adding Available Sections**

1. Click the **Report** tab.
2. Type **Label Count** in the **Name** field.
3. Click the Header While Printing section under Available.
4. Click the **<** button to add the Header section.
5. Click the **Label** section under **Available**.
6. Click the **<** button to add the Label Count section.
7. Click the **Add** button. Label Count is added to the item list (Figure 218).

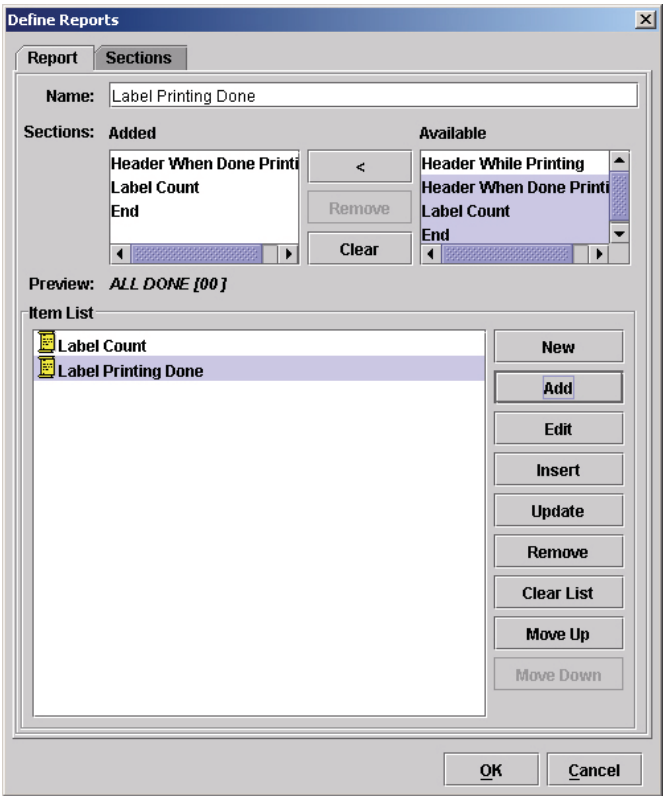



**Figure 219 Adding Sections to a Report**

8. Click the **New** button.
9. Type **Label Printing Done** in the Name field.
10. Click Header When Done Printing under Available.
11. Hold the **Control** key and click **Label Count** and **End** under Available.
12. Click the **<** button to add the Header When Done Printing, Label Count, and End sections.
13. Click the **Add** button. Label Printing Done is added to the item list. See Figure 219.
14. Click **OK** to close the dialog box.

## Using Reports

To make sure the correct report is transmitted to the operator panel LCD, add the following entry to the mapping table.

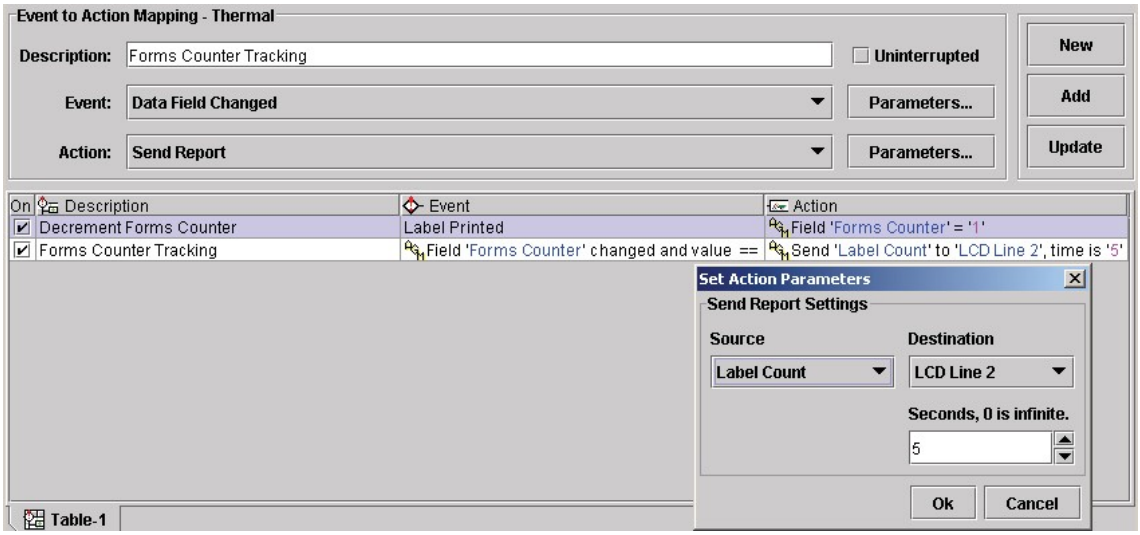



**Figure 220 Defining Entries in the GPIO Manager**

Once the report has been defined and the Send Report action has been selected, the parameter block allows you to specify what is to be done with this report.

The Source drop down menu allows you to select a report previously created. The Destination options tell the system where to transmit the report. The Seconds field sets the time the report will be visible (applicable only to the operator panel LCD). See Figure 220.

# Timers

The GPIO Manager allows timers to be used for different purposes. A timer can be programmed to create a delay between an event and an action or it can be programmed to generate an event at a specific time each day or even at a specific day and time each week.

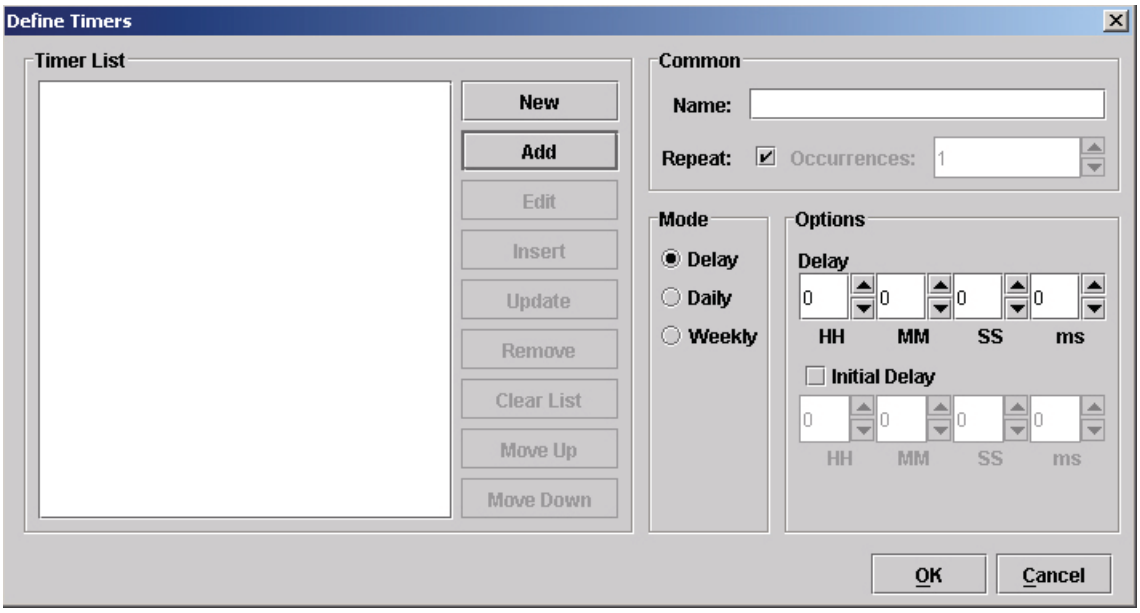



**Figure 221 The Define Timers Dialog Box**

Three modes are available: Delay, Daily, and Weekly which is discussed in the following sections.

## Delay Timer Mode

**NOTE:** The Delay Mode and Initial Delay option can be controlled by a predefined data field. The data fields are named

<TIMER_NAME>_Delay and <TIMER_NAME>_InitialDelay, where

<TIMER_NAME> is the name you specified to the timer.

The Delay mode allows you to delay an action by a specified amount of time. For example, a printer is used on a production line and the operator is responsible for reloading ribbon when the printer runs out of ribbon. The operator normally requires approximately 1.5 minutes to replace the ribbon but if it takes more than 2 minutes we want the printer to prompt an action.

1. Select **Edit ▶ Define Timers**. The Define Timers dialog box opens with the Delay mode selected by default.
2. Type **Ribbon Reloading Error** in the Name field.
3. Check mark the Initial Delay check box to enable the initial delay parameters.
4. Enter **2** in the MM field under Initial Delay.

   This specifies a two minute initial delay in which the operator has two minutes to reload ribbon. If the operator is able to change the ribbon and place the printer online within two minutes, the delay timer stops. If the operator is unable to change the ribbon within the two minutes, then the delay timer starts and the printer gives a warning. The delay timer will repeat for a specified amount of time until the error is cleared.

5. Enter **10** in the SS field under Delay.

   If the operator is unable to change the ribbon within two minutes as specified in the previous step, then the delay timer starts in 10 seconds. In 10 seconds the printer will give a warning. The warning will repeat every 10 seconds until the error is cleared.

6. Click **Add**. The Ribbon Reloading Error delay timer is added to the Timer list. See Figure 222.
7. Click **OK**.

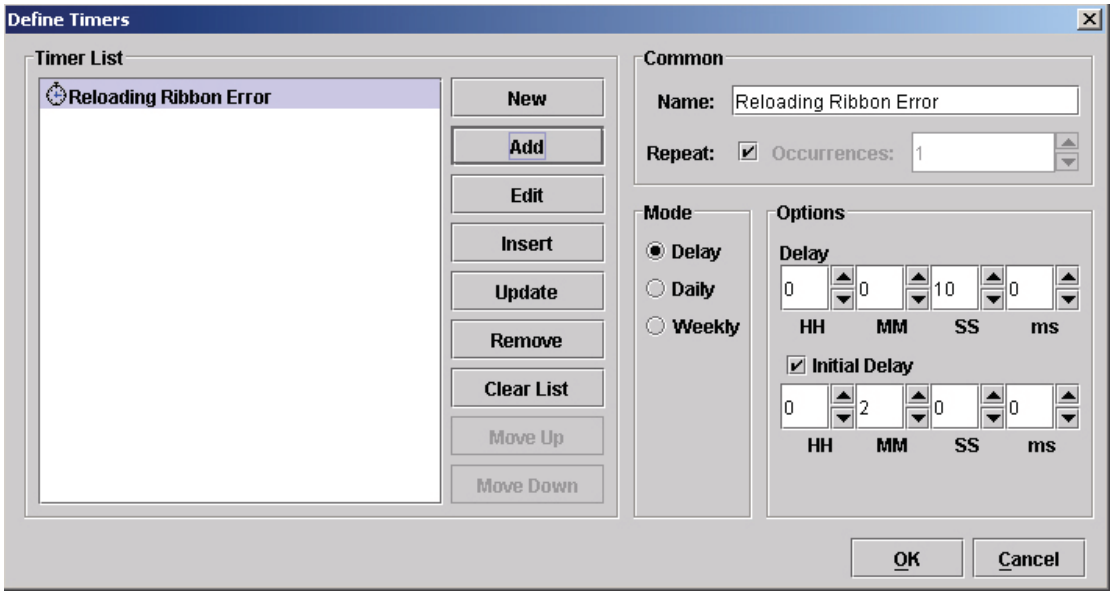



**Figure 222 Setting a Delay Timer**

## Daily Timer Mode

To generate an event at a specific time each day, use the Daily timer mode. For example, you may want the printer to send a status report to the host system everyday at 12:45 p.m. The status report can include a number of datafields that keep track of paper, ribbon, or number of labels printed, etc. To program the timer to generate the status report, do the following.

1. Select Edit ▶ Define Timers.
2. Type **Daily Status** in the Name field.
3. Select **Daily** as the mode.
4. Enter **12** in the Hour field and **45** in the Minute field.
5. Make sure there is a check mark in the Repeat check box. This ensures that a status report will be sent everyday at 12:45 p.m.

   If you want to specify a certain amount of days for the printer to send a status report, uncheck the Repeat box and enter a value in the Occurrences field. For instance, to have the printer send a status report for only five days, uncheck the Repeat box and enter **5** in the Occurrences field.

6. Click **Add**. The Daily Status timer is added to the Timer List. See Figure 223.
7. Click **OK**.

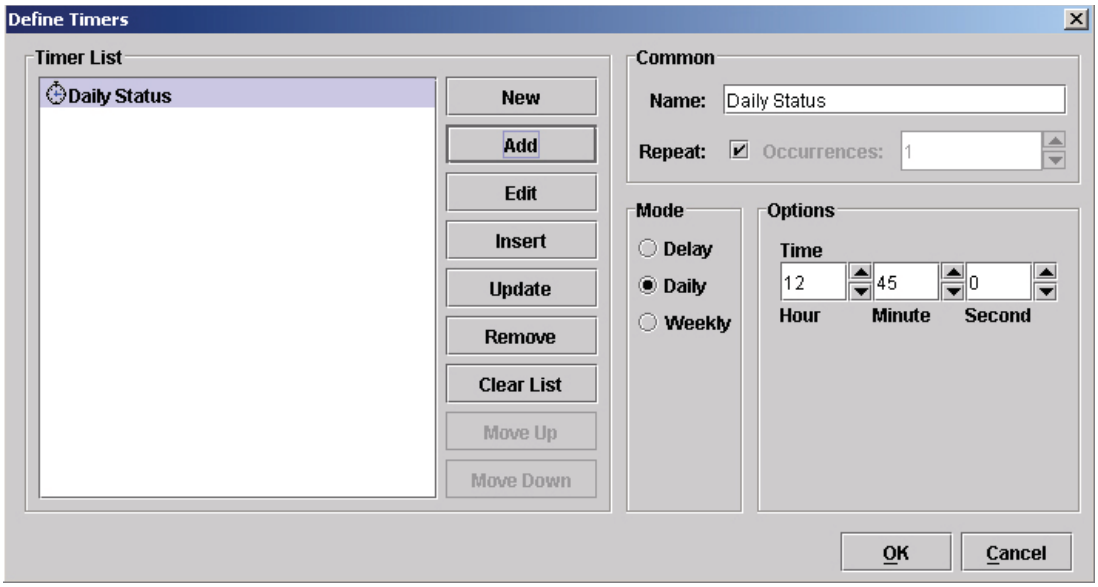



**Figure 223 Setting a Daily Timer**

## Weekly Timer Mode

To generate an event on a specific time and day, use the Weekly timer mode. In continuing with the previous example, if you want the printer to generate a report to the host printer on certain days of the week at the same time, do the following.

1. Select Edit ▶ Define Timers.
2. Type **Weekly Status** in the Name field.
3. Select **Weekly** as the mode.
4. Enter **12** in the Hour field and **45** in the Minute field.
5. Check mark **Monday** and **Friday**. This specifies that an event will occur at 12:45 p.m. on Mondays and Fridays each week.

   If you want to specify a certain amount of weeks for the printer to send a status report, uncheck the Repeat box and enter a value in the Occurrences field. For instance, to have the printer send a status report for only five weeks, uncheck the Repeat box and enter **5** in the Occurrences field. For this example, the printer sends a status report to the host printer on Mondays and Fridays at 12:45 p.m. for the next five weeks.
6. Click **Add**. The Weekly Status timer is added to the Timer List. See Figure 224.
7. Click **OK**.

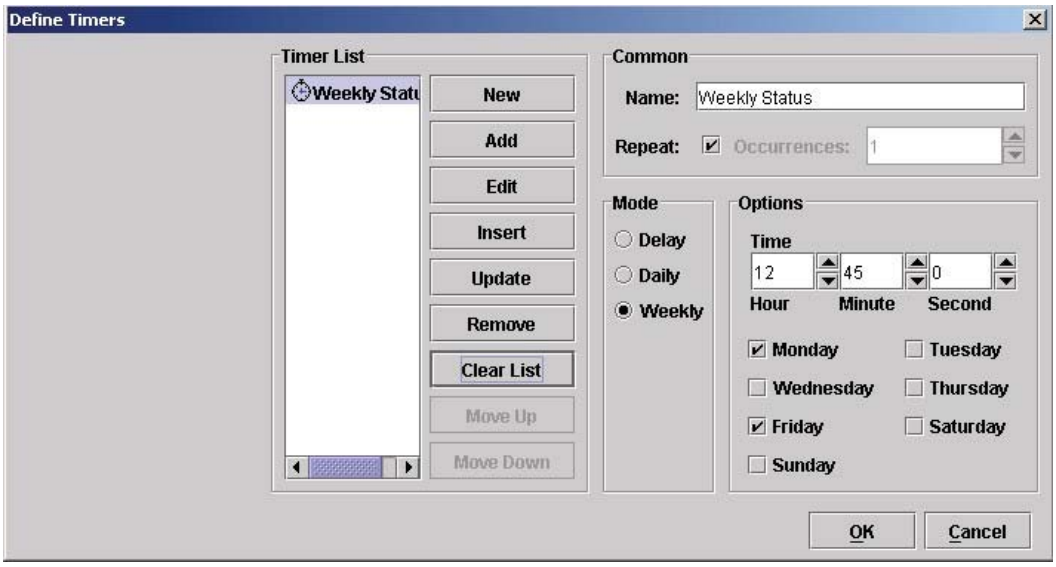



**Figure 224 Setting a Weekly Timer**

## Using Timers

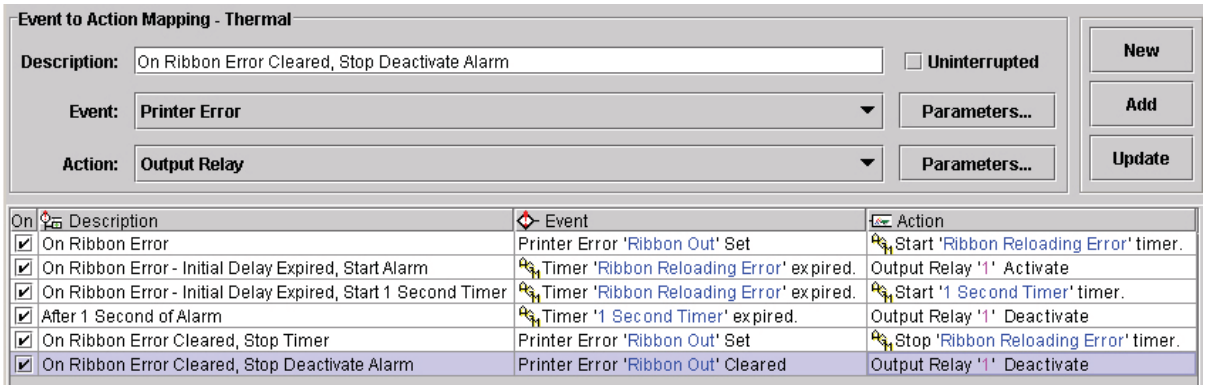



**Figure 225 Using Timers to Activate an Alarm**

When there is a ribbon error, the “On Ribbon Error” timer starts (Figure 226). First there is a two minute initial delay for the operator to change the ribbon. If the initial delay expires, it generates a timer expired event in which relay 1 activates. Relay 1 is set to sound an alarm. With a one second delay we make sure the relay is activated for only a short time. After 10 seconds, if the ribbon error is still there, the alarm sounds again. This will continue until the ribbon error is cleared at which time we will stop the “On Ribbon Error” timer and will deactivate relay 1.

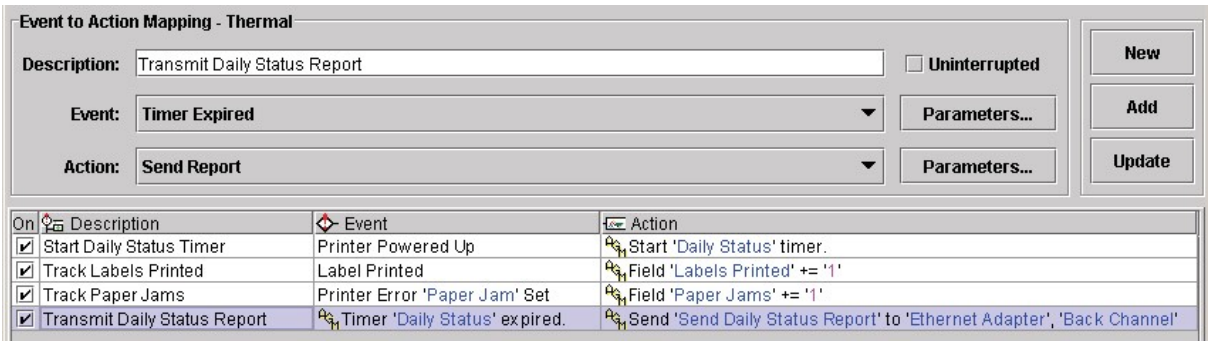



**Figure 226 Using Daily Timers**

To set a daily status timer, we define two data fields:

- Labels Printed – keeps track of the number of labels printed by incrementing the data field for each label printed.
- Paper Jams – keeps track of the number of paper jams by incrementing the data field for each paper jam.

Daily at 12:45 we want to transmit the number of printed labels and paper jams to the host. The format for this information should be

“Labels printed: {number};Ribbons used: {number}[CR][LF]”. Based on a number of sections, we create a report called Daily Status Report. See Figure 226.

Once defined, the timer needs to start at power-up. GPIO uses its own timer based on the Real Time Clock. During the day, the data fields are updated for each label printed and each paper jam occurrence. As soon as the timer expires, the daily status report transmits to the printer.

For a weekly status report, set the timer setting to transmit the report weekly.

# Mapping

## Download Mapping Tables

Once the mapping table has been designed and tested using the GPIO testbox it must be downloaded to the printer. This can be done in three ways:

### Method 1: Using Normal Download Mode

1. Save the mapping table from within the GPIO manager using the default file name extension. This creates a downloadable file.
2. Set the printer in download mode (power-on with Menu and Down key pressed)
3. Send the file to the printer in a DOS box (also called Command Prompt); type **copy/b filename.ext lpt1**.

### Method 2: Using PNE

1. Save the mapping table from within the GPIO Manager using the default file name extension. This creates a downloadable file.
2. Attach the saved file as a download file to a printer and use the upgrade utility.

Once downloaded, the printer resident GPIO event parser detects the file and enables GPIO.

**Method 3: Using the GPIO Download Facility**

1. Click the Download button on the GPIO toolbar.
2. Enter the required passwords for the GPIO program file and/or the communication sessions.
3. In the connection tab, specify the access method and configure the network or serial modem (if applicable).
4. Click OK to download the active mapping table(s) to the printer.

Once the mapping table is downloaded, the printer resident GPIO event parser will detect the file and enable GPIO.

## Preloaded Table

If a GPIO board is installed in the printer but no user defined mapping table has been loaded, the printer will revert to a preloaded table.

Simple printer menus allow for programming three of the 11 (seven outputs, four inputs) pre-defined interface signals to a particular polarity or logic function that meets all typical print and apply requirements. They can also be compatible with all the features available on other manufacturers' external I/O interfaces. This allows easy migration of Printronix T5000e or T5000r printers to new or existing systems. Field interface is accomplished through an industry standard 50-pin D type connector.

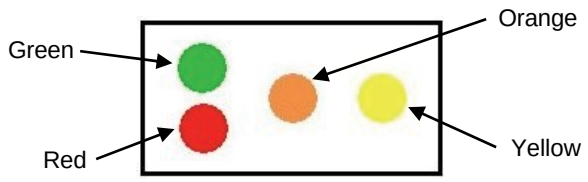
| Input | Function | Notes |
|---|---|---|
| 1 | Reprint | Requires 16 Mbyte Printer Memory Option |
| 2 | Start Print | Polarity programmable via printer menu |
| 3 | Feed | |
| 4 | Pause | |
| 5..8 | Not Used | |

| Output | Function | Notes |
|---|---|---|
| 1 | Ribbon Low | |
| 2 | Ribbon Out | |
| 3 | Media Out | |
| 4 | Error/Service Required | |
| 5 | End Print | 8 modes selectable via printer menu |
| 6 | Data Ready/On Line | Selectable via printer menu |
| 7 | Not Used | |
| 8 | Power On | |

## Mapping Examples

### Indicator Lights Example

Imagine a factory floor with a number of printers. Over each printer are mounted lights that are controlled by the GPIO interface. The lights indicate the printer's status with the following conditions:




| Light | Conditions |
|---|---|
| Green | Printer online, waiting for a print job or is currently printing, no warnings |
| Green and Orange | Ribbon low warning, printing continues |
| Green and Yellow | Label waiting for operator remove, printing stopped |
| Red | Printer offline, no errors |
| Red and Orange | Printer offline, ribbon out |
| Red and Yellow | Printer offline, paper out |

The following table shows all input required for printer control, hardware interface, and connection.

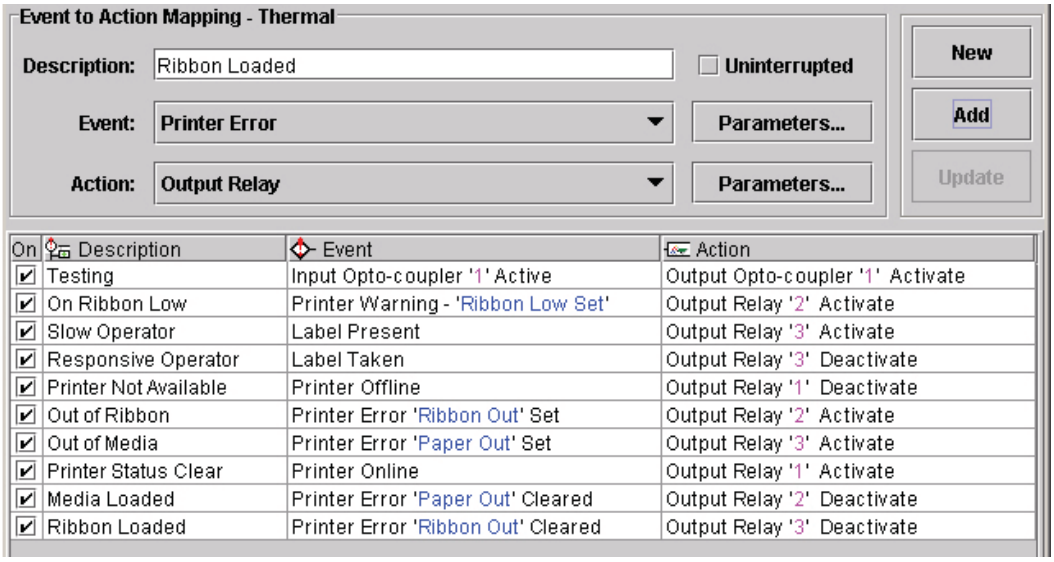



**Figure 227 Setting Events and Actions for Printer Control**

The connections made on the printer's I/O connector are displayed in the diagram below.

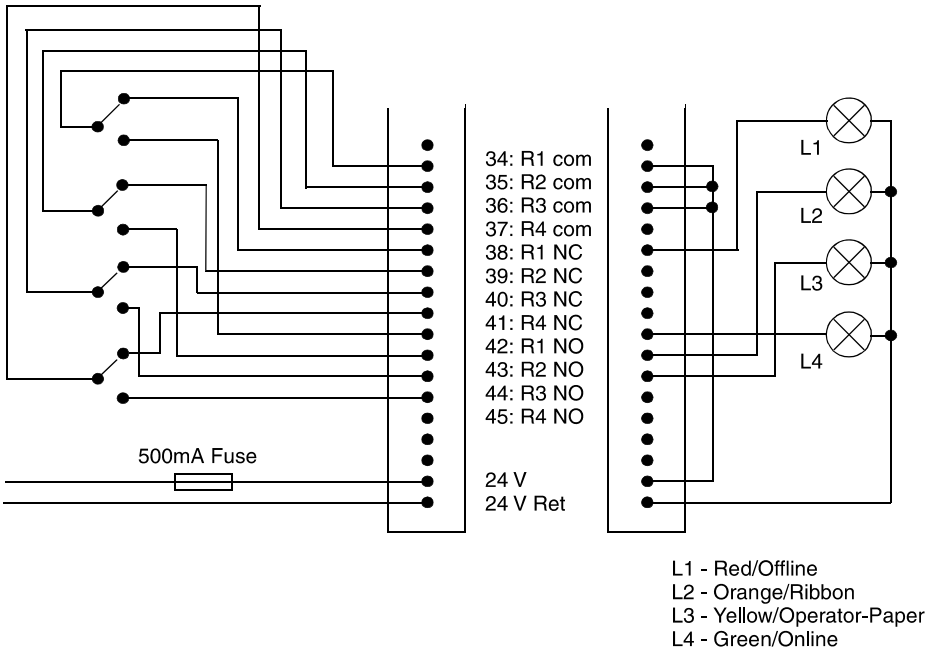



**Figure 228 I/O Connections**

### Applicator Example

Imagine that a printer is connected to an applicator. When the printer has a label ready for the applicator to handle, it signals this event by activating one of the outputs. As soon as the applicator takes the label, the signal to the applicator will be removed until the next label is present. This way a simple interface connection between an applicator and printer is established. If any printer error occurs, relay 1 will activate and result in additional action. Once the problem is solved, placing the printer online clears the error report and printing can start again.

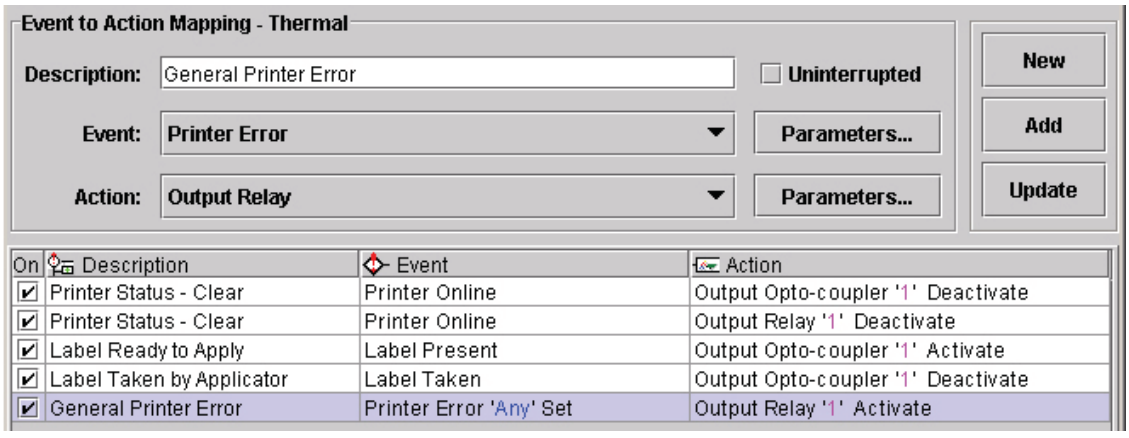
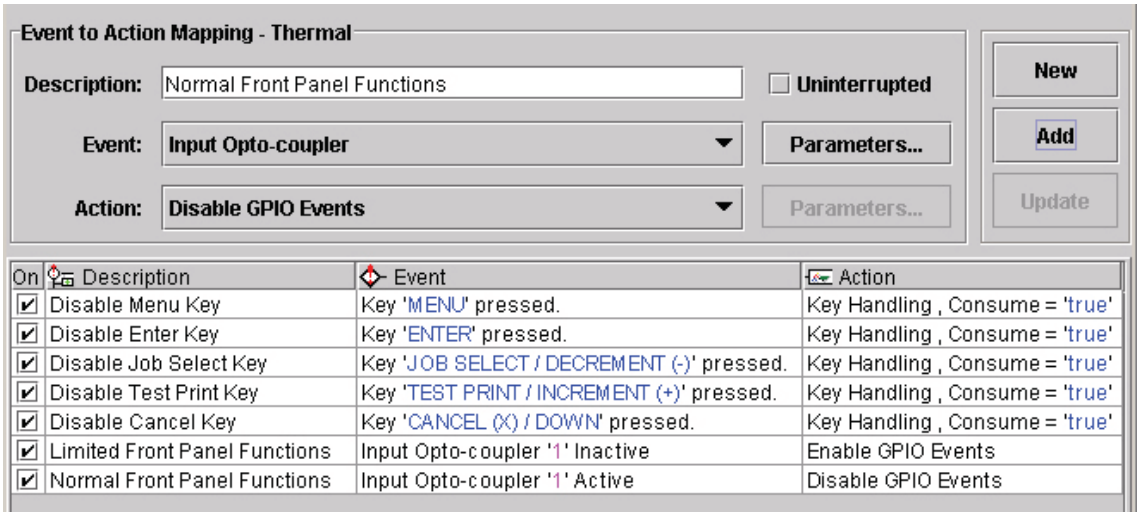



**Figure 229 Setting Events and Actions for Print and Apply**

### Protected Printer Example

To protect the printer's configuration from being overwritten, disable the operator panel buttons that are not used daily. The Online and Feed buttons should remain active while the rest disabled. The mapping table listed in Figure 230 shows this function.

If the GPIO board is installed in the printer these functions may be rendered inactive by deactivating the event parser using a special connector. If the connector is installed, the event parser is disabled and the panel functions as a panel on a printer. This allows service engineers access to all printer configurations. Once the connector is removed the panel remains protected.




| On | Description | Event | Action |
|---|---|---|---|
| ☑ | Disable Menu Key | Key 'MENU' pressed. | Key Handling , Consume = 'true' |
| ☑ | Disable Enter Key | Key 'ENTER' pressed. | Key Handling , Consume = 'true' |
| ☑ | Disable Job Select Key | Key 'JOB SELECT / DECREMENT (-)' pressed. | Key Handling , Consume = 'true' |
| ☑ | Disable Test Print Key | Key 'TEST PRINT / INCREMENT (+)' pressed. | Key Handling , Consume = 'true' |
| ☑ | Disable Cancel Key | Key 'CANCEL (X) / DOWN' pressed. | Key Handling , Consume = 'true' |
| ☑ | Limited Front Panel Functions | Input Opto-coupler '1' Inactive | Enable GPIO Events |
| ☑ | Normal Front Panel Functions | Input Opto-coupler '1' Active | Disable GPIO Events |

**Figure 230 Setting Events and Actions to Disable Front Panel Keys**

If the two last entries in the mapping are entered, the following connector wiring results in a tool that can be used to enable or disable the normal front panel functions.

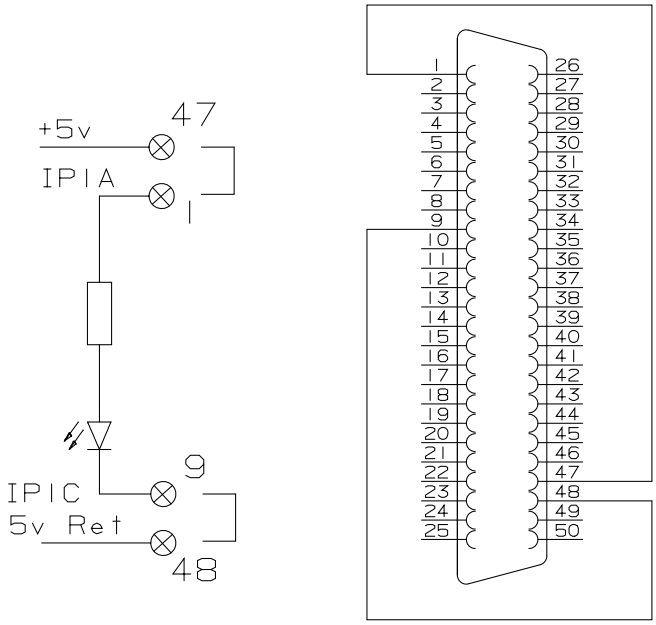



**Figure 231 Connector Wiring for Protected Printers**

### Panel Selected Label Printing

Imagine that the requirement is to print one of three labels without host intervention. To do this, the operator needs to have a selection mechanism at the printer.

For this application, store the three labels (PGL files) in the printer. The three labels named label_1, label_2, and label_3 sit in the printer waiting for the ~EXECUTE command.

The mapping table in Figure 232 disables the Menu and Enter keys, reassigns the Feed function to the Down key, and the – key as the original Feed key. The + key sends the following data streams to the host via the serial port:

- the – key sends ~EXECUTE;Label_1;1<T><T>~NORMAL<T>
- the Feed key sends ~EXECUTE;Label_2;1<T><T>~NORMAL<T>
- the + key sends ~EXECUTE;Label_3;1<T><T>~NORMAL<T>

For more information, refer to the *PGL Programmer's Reference Manual*.

The mapping also creates the possibility of changing this modified printer into a normal one by plugging in the special connector from the Protected Printer example on page 233.

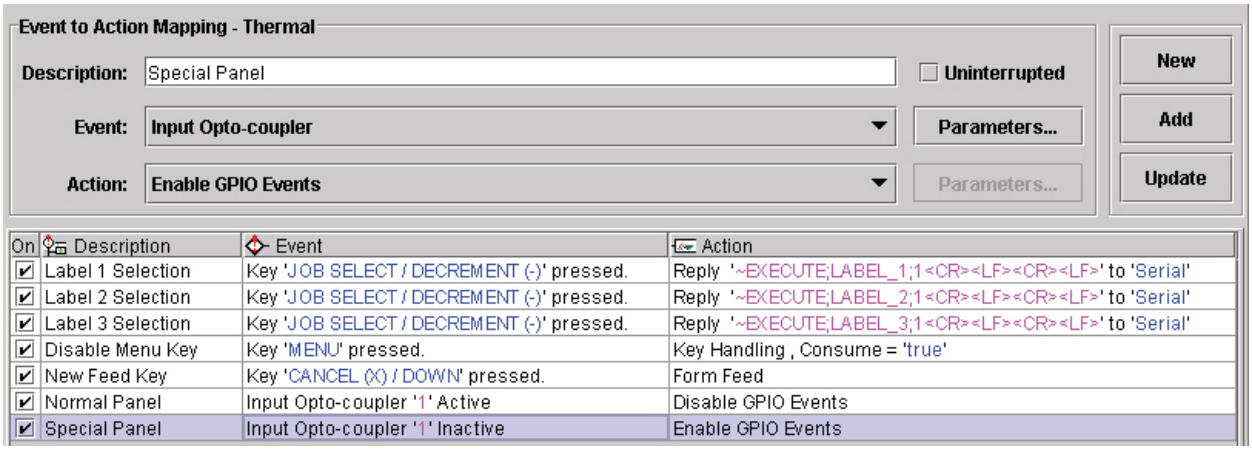



**Figure 232 Panel Selected Label Printing Mapping Table**

When port switching is enabled, the serial port is the only port with which the printer can communicate to itself. To make the printer communicate to itself a special serial connector is required that connects the transmit data output to the receive data input. When one of the three operator panel buttons is pressed, the printer receives a message through the serial port sent out of that serial port by the same printer.

The serial connector in 25 pin and 9 pin is displayed in Figure 233.

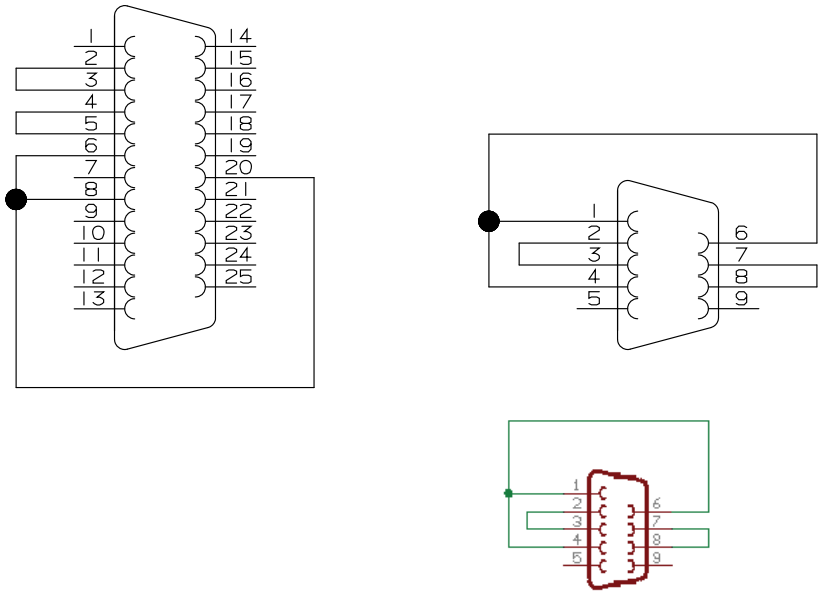



**Figure 233 25 Pin and 9 Pin Serial Connectors**

Once the PGL files and GPIO mapping table have been downloaded, and the special serial connector is installed on the printer, the printer will print label_1 when the – key is pressed, label_2 when the Feed key is pressed, and label_3 when the + key is pressed. The printer performs a form feed when the Down key is pressed. The Menu and Enter keys are non-functional.

**Operator Panel with GPIO Disabled**

**Operator Panel with GPIO Enabled**

**Figure 234 Operator Panels with GPIO Disabled and Enabled**

This works without the GPIO board installed in the printer; all it requires is the specially wired connector at the serial port. As indicated, it could also be combined with the Protected Printer example (see page 233). A connector placed at the GPIO port could disable all this and allow a service engineer to work on the printer without restrictions.

## Pin Code Protected Printer

The printer configuration protection described in the example on page 233 requires a special connector to disable GPIO so a service or application engineer can work on the printer without restrictions. The special connector requires one of the inputs to be specifically saved for protection purposes. You can use software to protect the printer using a PIN code that can be entered through the operator panel.

Imagine that the panel is partly disabled and the Online key, the Feed key and the Menu key are the only keys active. The Pause and Feed keys are operational because they are required for daily printer operation. The Menu key does not allow the user to open the configuration menu, instead it will ask for a PIN code before allowing the user to change the configuration.

For this application the operator panel keys get a value between 1 through 7 assigned to them using a datafield. A three digit PIN code allows any value between 111 through 777 to be used. For example, the assignment list include:

| Panel Key | Number Assigned |
|---|---|
| Pause | 1 |
| Minus | 2 |
| Feed | 3 |
| Plus | 4 |
| Menu | 5 |
| Down | 6 |
| Enter | 7 |

We'll use three more data fields named new_pin, pin_number and pin_entry_count. The pin_number data field contains the actual PIN number required to enable the configuration. The final result of entering code will be compared with this data field. If the codes and data fields match, the configuration will be enabled. If they do not match, the user is allowed two more chances. After that a message is sent to the host and the printer locks up. Use the new_pin data field to create the PIN number.

On each entry we'll send a message to line 2 of the LCD. For this example we'll use three messages with the following content:

- message one_pin contains '*--'
- message two_pin contains '**-'
- message three is either 'PIN accepted' or 'PIN incorrect'

When a key is pressed, the value of the corresponding data field is added to the value in new_pin (which initially contains 0). If the down key is pressed, new_pin now contains 6. If this is not the last (third) entry, the content of new_pin is multiplied by 10 (effectively shifting it over 1 decimal place). The message one_pin is sent to the LCD that now shows 'PIN number: *--'.

If the Feed key is pressed next, the value in the related data field (3) is added to new_pin which now contains 63. Again, it is not the last entry so new_pin is multiplied by 10, the content changes to 630 and the message two_pin is sent to the LCD to show ‘PIN number: **-‘.

If the Menu key is the third and last key pressed, the value 5 is added to new_pin. The content is now 635. Since this is the last key the number will not be multiplied by 10. Instead, we will send a message to the LCD. We now have the complete PIN code entered, compare it with the PIN code stored in the printer. This is done by a simple comparison of two data fields, new_pin and pin_number.

If the values match we’ll make all keys available to the user. If the values don’t match we’ll increase the ‘pin_entry_count’ by one and start over. If the ‘pin_entry_count’ reaches three some message will be transmitted to the host and the complete panel will be blocked.

**Data Fields, Reports, and Timers**

The following (U16) data fields need to be created for this application where the content of the pin_number data field can be any value between 111 and 777.

| Data Field Name | Initial Value |
|---|---|
| Pause_Key | 1 |
| Minus_Key | 2 |
| Up-Key | 3 |
| Plus_Key | 4 |
| Menu_Key | 5 |
| Down_Key | 6 |
| Enter_Key | 7 |
| Pin_Entry_Count | 0 |
| New_Pin | 0 |
| Pin_Number | 635 |

Next to the data fields are status reports and information sent to the host if there is an error. The six reports listed in Table 13 need to be generated. Each report only has a single section that may have the same name as the report.

**Table 13 Report Names, Sections, and Content**

| Report Name | Section Name | Content |
|---|---|---|
| pin_empty | pin_empty | PINumber:--- |
| one_pin | pin_1 | PINumber:*-- |
| two_pin | pin_2 | PInumber:**- |
| pin_accepted | pin_ok | PIN accepted |
| incorrect_pin | pin_error | PIN incorrect |
| locked | locked | *Printer Locked* |

The PIN number application is described by reviewing each of the mapping tables and explaining each entry in that table.

**Tables**

Event to Action Mapping - Thermal

Description: Wait For Menu Key — Uninterrupted

Event: Panel Key — Parameters...

Action: Select Mapping Table — Parameters...

New | Add | Update

| On | Description | Event | Action |
|---|---|---|---|
| ☑ | Disable Enter Key | Key 'ENTER' pressed. | Key Handling , Consume = 'true' |
| ☑ | Disable Cancel Key | Key 'CANCEL (X) / DOWN' pressed. | Key Handling , Consume = 'true' |
| ☑ | Disable Job Select Key | Key 'JOB SELECT / DECREMENT (-)' pressed. | Key Handling , Consume = 'true' |
| ☑ | Disable Test Print Key | Key 'TEST PRINT / INCREMENT (+)' pressed. | Key Handling , Consume = 'true' |
| ☑ | Wait For Menu Key | Key 'MENU' pressed. | Send 'Pin Empty' to 'LCD Line 2', time is 'infinite' |
| ☑ | Wait For Menu Key | Key 'MENU' pressed. | Select Mapping Table 'pin_part_1' |

**Figure 235 Power_On Mapping Table**

Table 13 does not show all entries in a power-on table, just those that are important for the PIN number application. The first four entries disable the important keys; the action that normally would result from pressing the key will not execute. The Pause and Feed key are left unchanged but as soon as the menu key is pressed the specified actions execute. Since the first four keys specified are disabled, they are ignored. Next the pin_empty message displays in Line 2 of the LCD then the Pin_Part_1 mapping table is selected.

Event to Action Mapping - Thermal

Description: Get Next Pin Digit — Uninterrupted

Event: Data Field Changed — Parameters...

Action: Select Mapping Table — Parameters...

New | Add | Update

| On | Description | Event | Action |
|---|---|---|---|
| ☑ | Get Pause Key Value | Key 'PAUSE' pressed. | Field 'new_pin' += 'pause_key' |
| ☑ | Get Minus Key Value | Key 'JOB SELECT / DECREMENT (-)' pressed. | Field 'new_pin' += 'minus_key' |
| ☑ | Get Up Key Value | Key 'FEED / UP (^)' pressed. | Field 'new_pin' += 'up_key' |
| ☑ | Get Plus Key Value | Key 'TEST PRINT / INCREMENT (+)' pressed. | Field 'new_pin' += 'plus_key' |
| ☑ | Get Menu Key Value | Key 'MENU' pressed. | Field 'new_pin' += 'menu_key' |
| ☑ | Get Down Key Value | Key 'CANCEL (X) / DOWN' pressed. | Field 'new_pin' += 'down_key' |
| ☑ | Get Enter Key Value | Key 'ENTER' pressed. | Field 'new_pin' += 'enter_key' |
| ☑ | Create Pin Number | Field 'new_pin' changed. | Field 'new_pin' = '10' |
| ☑ | Show First Entry Done | Field 'new_pin' changed. | Send 'one_pin' to 'LCD Line 2', time is 'infinite' |
| ☑ | Get Next Pin Digit | Field 'new_pin' changed. | Select Mapping Table 'pin_part_2' |

**Figure 236 Pin_Part_1 Mapping Table**

If a key is pressed for the first 7 entries, the value of the related data field is added to the new_pin data field, which is multiplied by 10 to shift the content one decimal place over. Since we now have the first part of the PIN number in a data field, we'll display the one_pin message on the LCD and switch to the Pin_Part_2 table.

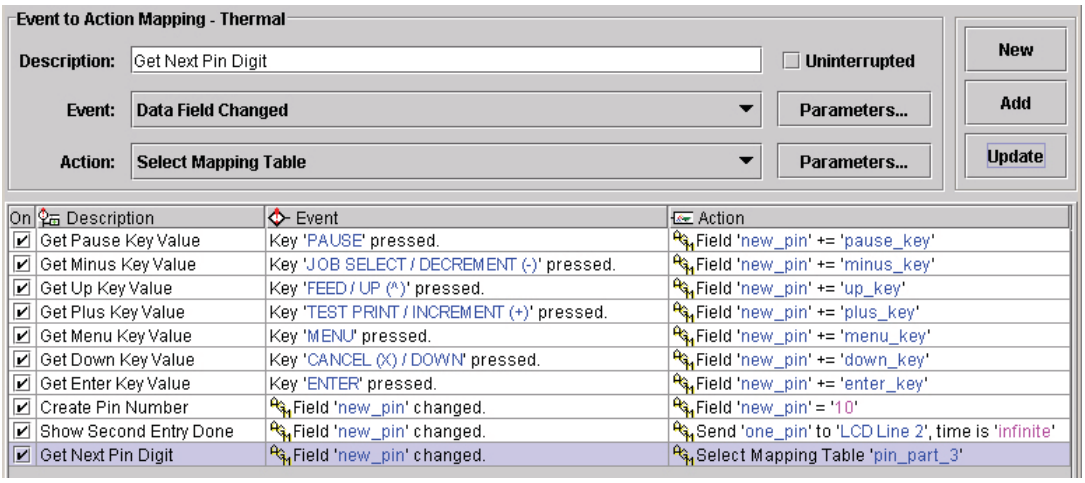



**Figure 237 Pin_Part_2 Mapping Table**

The Pin_Part_2 mapping table is similar to the Pin_Part_1 mapping table. If a key is pressed for the first 7 entries, the value of the related data field is added to the new_pin data field, which is multiplied by 10. The message two_pin will display to indicate that two numbers of the PIN code have been entered and to select the Pin_Part_3 table.

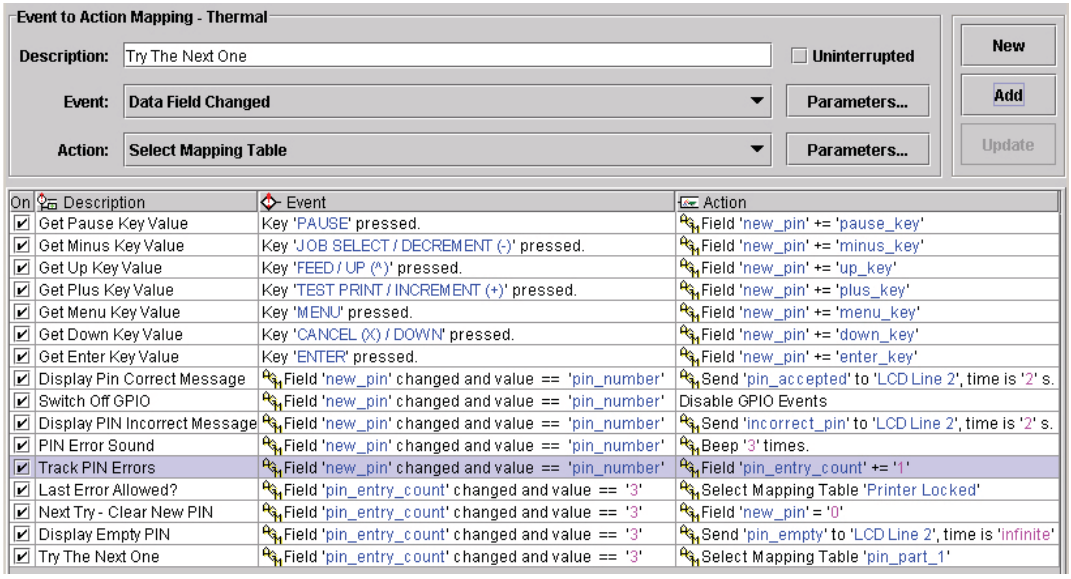



**Figure 238 Pin_Part_3 Mapping Table**

The Pin_Part_3 mapping table starts with the same seven entries. The value is added to new_pin but this time we do not multiply the value by 10; we now have the complete PIN code. The message displayed depends on the result of the comparison between the new_pin data field and the pin_number data field. If the two values are the same, the message pin_accepted will display and GPIO will be disabled, allowing the printer to function as a normal printer. Configuration changes can be made and saved. A power cycle is required to reactivate GPIO and its printer protection function.

If the two numbers do not match the pin_incorrect message displays on the LCD. The printer will beep three times and the pin error count increments. This value is tested to see if this was the third trial. If not, the user is given another try.

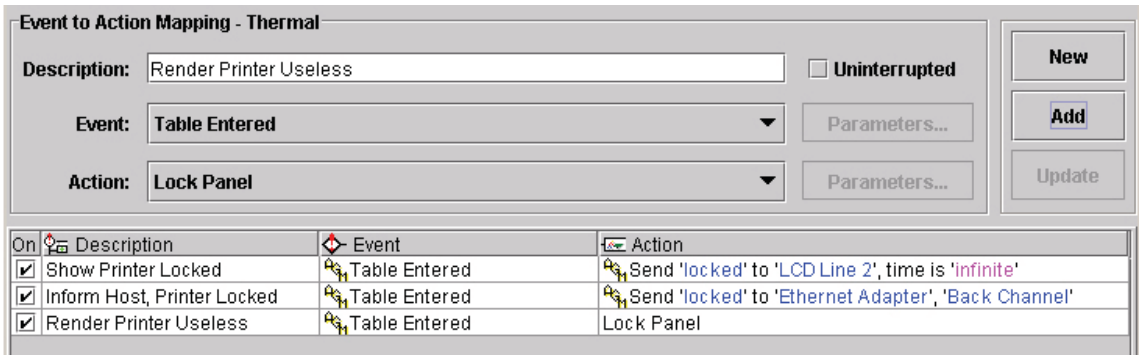



**Figure 239 Prt_Locked Mapping Table**

If it is the third try, the event generator timer starts and the Prt_Locked mapping table is selected. In this table we'll inform the user that the printer is locked by displaying the Printer Locked message on the LCD. We'll inform the host by sending a message through the interface and disable the operator panel, making it useless until a power cycle has been done.

The program could be easier to enter by using the new subroutine function. The seven entries related to the pressing of the keys to generate the PIN code could be made a subroutine. This would improve printer memory usage and save time on typing.

# GPIO Version Control System

The Version Control System (VCS) allows you to assign an application name and add version information to the files. This information helps you easily identify the purpose of the files created and in which application. The VCS prints the application name and version information in the printer's configuration printout.

## Application Name and Version Information

The application name is a logical user-defined name for the GPIO application and is stored inside the GPIO Configuration file. The maximum length is 16 characters.

The version information contains the following:

- **Version Number** – V<version>.<revision><release level>

  where:

  <version> = decimal number ( 1 … n )

  <revision> = decimal number ( two digits: 00 … 99 )

  <release level> = upper-case alphabetic character ( A … ZZ )

**Examples:** V1.00A (initial version), V2.06C, V3.21AA, V3.21BX.

- **Last Modification Date** - <month> - <day> - <year>

  Indicates when the GPIO Configuration File was last modified.

- **File ID** – Unique 32-bit hexadecimal number (checksum).

**NOTE:** The VCS system cannot prevent the creation of two files that contain the same application name and version information but different content. To help identify such similar files, the Manager will include a checksum in the file.

Both the version number and last modification date are stored in the respective configuration file.

### Creating a New File

When creating and saving a file for the first time, the Set Application Name dialog box opens prompting you to enter a logical name to identify the application.

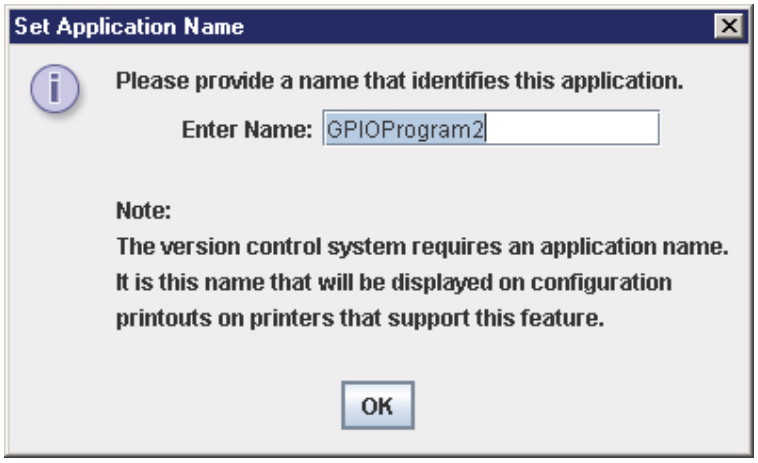



**Figure 240 Setting the GPIO Application Name**

### Opening an Existing File

When you select File -> Open, or upload a file from the printer, the VCS checks if the file contains version information. If not, a dialog box opens and prompts you to enter a logical application name. The version number is set to 1.00A. You can then start modifying the application.

### Modifying an Existing File

After opening an existing file, the process of building and modifying the application starts. To save your work as a new file or subsequent modifications of an existing file, do the following:

- **Save As New File**

  Select File -> Save As. The application name is already assigned and the version number is 1.00A. Select a folder name, enter a file name, and click Save. The file is then stored on disk.

- **Subsequent Saves**

  Select File -> Save. The Version Confirmation dialog box opens with save options. See Figure 241.

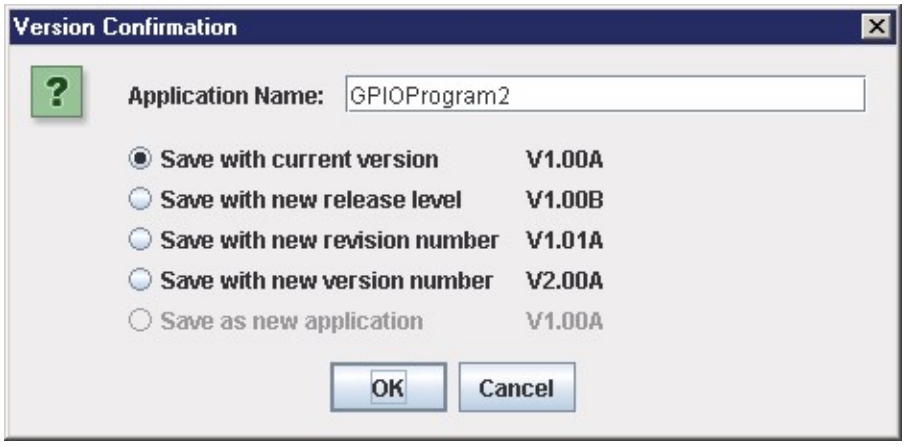



**Figure 241 Confirming the File Version**

**NOTE:** If you do not change the application name, the ‘Save as new application’ option is disabled. In this case, you must select one of the first four options. ‘Save with current version’ is the default selection.

If you change the application name, ‘Save as new application’ is enabled, allowing you to reset the version number to 1.00A.

The version numbers displayed with the options are the version numbers the GPIO Manager will store in the file.

**NOTE:** Version number increment rules.

When a file reaches release level Z and you select ‘Save with new release level’, the release level increments to AA.

For example, 1.01Z becomes 1.01AA.

When the release level reaches ZZ and the you select ‘Save with new release level’, the release level resets to A and the revision number increments. For example, 1.01ZZ becomes 1.02A.

When the revision number reaches 99 and you select ‘Save with new revision number’, the revision number resets to 00, the release level resets to A, and the version number increments.

For example, 1.99C becomes 2.00A.

## Viewing File Version Information

To view version information of a file, select File -> Properties.

**Figure 242 Viewing File Properties**

## Automatic File Backup System

The GPIO Manager automatically creates backups of the last 20 saved versions of a file. This backup system uses the file name (as specified in the File Save As … dialog) to create the following file and folder structure:

< jav.user.dir\backup > - the java user directory is the PNE install directory.

< File Name > - folder that will store the backups.

< ~ddmmyyyy_hhmmss>.bck - backup of the latest previous version of a file.

< ~ddmmyyyy_hhmmss>.bck - backup of the second latest previous version of a file

…

< ~ddmmyyyy_hhmmss>.bck - backup of the oldest previous version of the file.

**Example:**

File name = ‘PTNX_SecurePrinting.gcf

< jav.user.dir\backup > PTNX_SecurePrinting

~11042008_123145.bck

~11042008_124432.bck

…

~11042008_145022.bck

## Backup History

The GPIO Manager has a Backup History option that allows you to view the backup history of a file. The system maintains the last 20 versions of the file. This dialog has options to clear the history, open an older version, and save under a different file name.

**Figure 243 Backup History Information**

- Name - displays the application name assigned to the file at the time the backup was created.
- Version - displays the version assigned to the file at the time the backup was created.
- Checksum - displays the checksum calculated over the data of the file at the time the backup was created.
- Data and Time - shows when the backup file was created.
- Notes - displays which version of the GPIO manager the backup file was created.
- Clear button - clears the history.
- Open button - opens the backup file for editing.
- Save As button - saves a backup file under a different name to a local storage medium.
- Close button - closes the dialog.

# Technical Information

## Opto-couplers

The opto-couplers are Vishay SFH6916 or equivalent with the following basic specifications:

**NOTE:** Please check the Vishay SFH6916 datasheet for electrical specifications.

**GaAs Light Emitting Diode**

| | |
|---|---|
| Reverse Voltage (Vr) | : 6 V |
| Forward Current (DC) | : 50 mA |
| Peak Forward Current (Ifp) | : 2.5 A |

**NPN Silicon Photo Transistor**

| | |
|---|---|
| Isolation Voltage (Vr) | : 3750 V r.m.s. |
| Collector to Emitter voltage (Vceo) | : 70 V |
| Collector current | : 50 mA |

High switching speed

UL approved

The inputs of the GPIO board (the LEDs of 8 opto-couplers) are protected against overcurrent by the inclusion of a 4700 Ohm resistor in the anode connection. This allows for an input voltage range between 5 and 24 VDC.

The opto-coupler outputs are open collector transistors. By design the output current available is set at 3 ma. max. This value is based upon an opto- coupler current transfer ratio of 100% at an ambient temperature of 50 degrees C. Load currents greater than 3 ma. will cause the transistor to come out of the saturation, resulting in a rise in the output voltage and possible damage to the transistor. For safety purposes a voltage no greater than 42 volts DC should be applied to the GPIO board. The GPIO board has a provision for mounting resistors, either in the connection between the actual output pin and the collector of the output transistor or from a common connector pin (17) to the collector of the output resistor. See the drawing on page 248.

## Relays

Relays are the NAiS TX type and are 2-Amp high capacity relays with the following basic specifications:

**NOTE:** Please check the NAiS TX type relay datasheet for complete electrical specifications.

| | |
|---|---|
| Surge withstand between coil and contacts | : 2500 V |
| Breakdown voltage between coil and contact | : 2000 V |
| Nominal switching capacity | : 2 A @ 30 V |
| Maximum switching voltage | : 220 V DC |
| Maximum switching current | : 2 A |
| Contact settling time | : 4 mS (max) |

The relays are type DPDT of which a single SPDT contact is made available on the I/O connector.

**CAUTION** **For safety purposes do not apply a voltage greater than 42 volts DC to the GPIO board, even though the relay is rated at 220 volts DC.**

## Voltages

Two voltages available on the I/O connector are 5 and 24 volts DC. Using self-healing fuses, both voltages are separately fused at 500 mA for 5 volts and 250 mA for 24 volts. These voltages share the same ground. To guarantee complete galvanic isolation between the printer and the equipment that is

connected through the GPIO interface, use a separate power source for the equipment the printer is connected to and make sure the I/O connector housing on the printer side is not connected to ground.

**NOTE:** Be aware that the 24 volts require a special connection inside the printer and that this voltage is not available when a cutter is installed in the Thermal printer.

## I/O Connector

The I/O connector is a 3 row, 50 pin, D type connector. Inputs and outputs of opto-couplers and relays are wired to this connector so that creating inputs using common anodes or cathodes or outputs using common emitters or collectors is fairly simple. The two voltages and their respective returns are also wired to this connector.

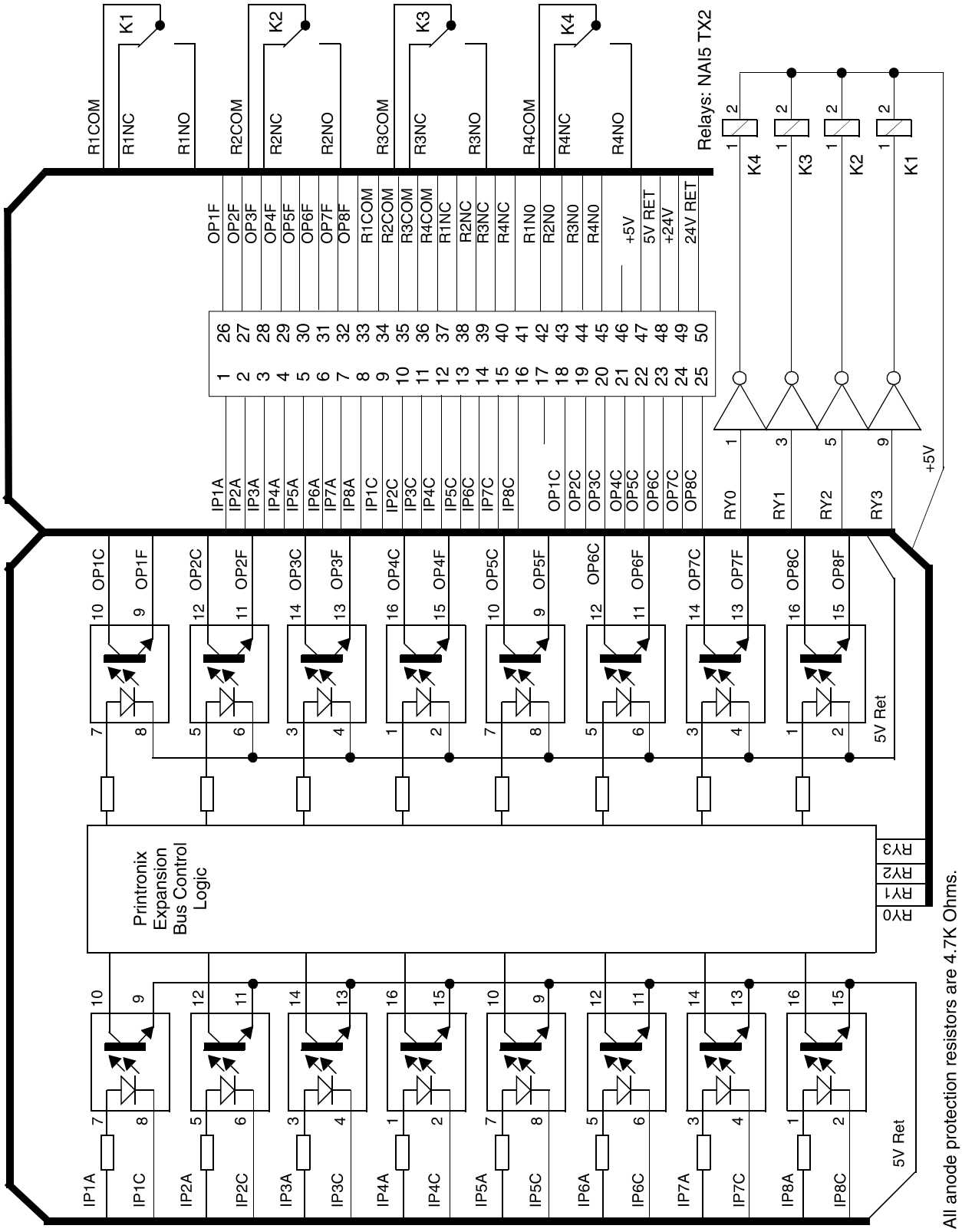
Table 14 specifies the connector wiring where IPxA represents the anode connection of the Input Opto Coupler diode and IPxC represents the cathode connection of the diode. OPxC represents the collector of the output transistor, and OPxE represents the emitter of the transistor. RxCM represents the common connection of the SPDT relay contact, RxNC represents the Normally Closed, and RxNO the Normally Open contact.

**Table 14 Connector Wiring**

| | | |
|---|---|---|
| 1: IP1A | 18: OP1C | 34:R1CM |
| 2: IP2A | 19: OP2C | 35:R2CM |
| 3: IP3A | 20: OP3C | 36:R3CM |
| 4: IP4A | 21: OP4C | 37:R4CM |
| 5: IP5A | 22: OP5C | 38:R1NC |
| 6: IP6A | 23: OP6C | 39:R2NC |
| 7: IP7A | 24: OP7C | 40:R3NC |
| 8: IP8A | 25: OP8C | 41:R4NC |
| 9: IP1C | 26: OP1E | 42:R1NO |
| 10: IP2C | 27: OP2E | 43:R2NO |
| 11: IP3C | 28: OP3E | 44:R3NO |
| 12: IP4C | 29: OP4E | 45:R4NO |
| 13: IP5C | 30: OP5E | 46: n.c. |
| 14: IP6C | 31: OP6E | 47:+5V |
| 15: IP7C | 32: OP7E | 48:5Vret |
| 16: IP8C | 33: OP8E | 49:+24V |
| 17: (*) | | 50:24Vret |

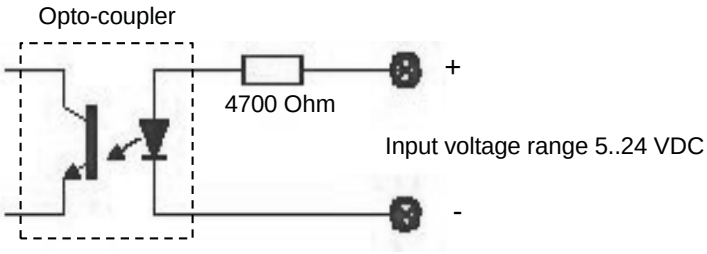
(*) Pin 17 is connected to a number of through holes on the GPIO printed circuit board. It can be used to supply power (via a user-installed resistor) to the collectors of the output transistors. See the diagram of the outputs on page 248.

# Basic GPIO Schematic Diagram

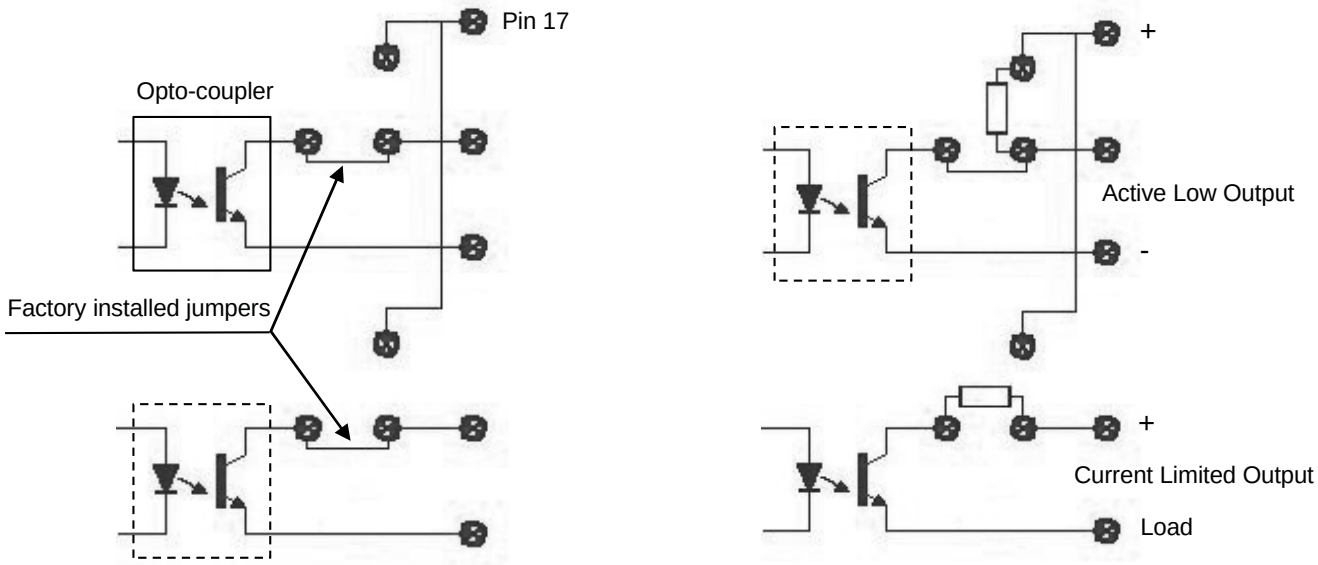


# Electrical Inputs And Outputs

## GPIO Opto-coupled Input Circuit




## GPIO Opto-coupled Output Circuit



# 7 AutoID Data Manager

## Overview

**NOTE:** You can set the AutoID Data Manager to launch automatically when PNE launches. See Startup Tab on page 30.

The AutoID Data Manager is an application that can collect EPC (electronic product code) telemetry data (stored on Radio Frequency Identification [RFID] tags) from RFID enabled printers and can also simultaneously collect bar code telemetry data (printed on labels) from ODV (online data validator) enabled printers.

With this telemetry data (EPC and/or ODV), you can create compelling audits of label and RFID tag quality.

The AutoID Data Manager application performs the following functions:

- Collects telemetry data in a Data Capture file. From this file, you can generate reports in several formats: comma separated variable (CSV), extensible markup language (XML), and a predefined ASCII text file (for RFID data only).
- Exports telemetry data to a third-party database using Java database connectivity (JDBC).
- Places the printer into a fault state and display a custom message on the operator panel.

## Data Validation

**NOTE:** To collect EPC telemetry data, you must set EPC Mgr Report to Enable (in the RFID CONTROL or RFID menu within the printer). Refer to the *RFID Labeling Reference Manual*.

To collect ODV telemetry data, you must set the printer's Telemetry Path to Network Port. See Set Telemetry Path (SL5000/T5000 Series Only) on page 15.

To access the AutoID Data Manager application, first select a printer or printers from the Printer Database that have an RFID encoder. Then select **Applications ▶ AutoID Data Manager** or click the (AutoID Data Manager) button. The AutoID Data Manager window opens. See Figure 244.

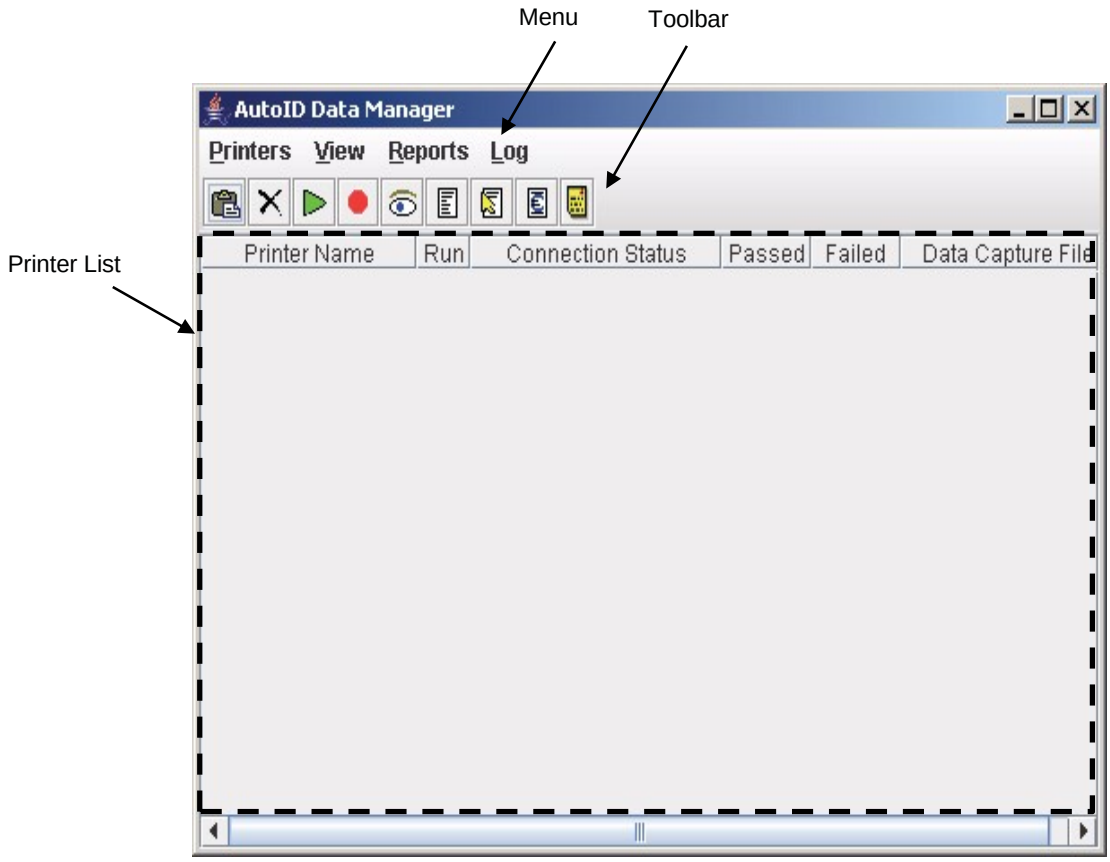



**Figure 244 AutoID Data Manager Printer List Window**

## The Menu And Toolbar

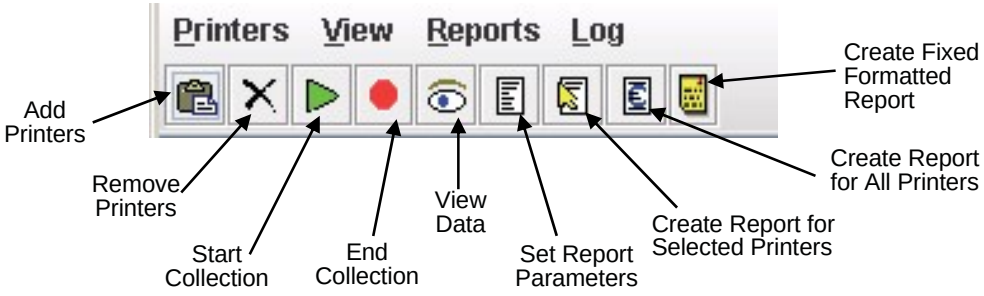



**Figure 245 The Menu and Toolbar**

**Printers**

**Start Collection on All Printers:** Starts the collection of telemetry data from all printers in the printer list.

**End Collection on All Printers:** Ends the collection of telemetry data from all printers in the printer list.

**Add Printers Selected from Printer Database:** Adds all printers that are selected in the Printer Database to the printer list. See Printer Database on page 25 and Printer List on page 252.

**Remove Printers Selected from List:** Removes all selected printers from the printer list.

**Select Data Capture File:** Allows you to change the Data Capture file name for a selected printer.

### View

**Data from Selected Printer:** View telemetry data from the selected printer. See Viewing Telemetry Data on page 254.

**NOTE:** You can also double-click the printer in the printer list to view telemetry data. See Printer List on page 252.

**NOTE:** You cannot view telemetry data if the data is being sent to a 3rd party database. See Telemetry Data Export To 3rd Party Databases on page 264.

### Reports

**Set Report Parameters:** Sets all of the report properties. You can select data fields, exclude items, select the report format type, and modify the report name and location. See Telemetry Data Export To 3rd Party Databases on page 264.

**Create Report for Selected Printers:** Creates an ASCII telemetry data file for all selected printers in the printer list, based on the Report Parameters settings.

**Create Report for All Printers:** Creates an ASCII telemetry data file for all printers in the printer list, based on the Report Parameters settings.

**Create Standard RFID Text Report:** Creates an ASCII telemetry data file for all selected printers in the printer list, based on predefined RFID fields.

**NOTE:** This Standard RFID Text report will not contain ODV data.

### Log

**Error Logging:** Logs printer errors. Options include enabling or disabling error logging.

## Printer List

When you add a printer, it appears in the printer list. See Figure 246.

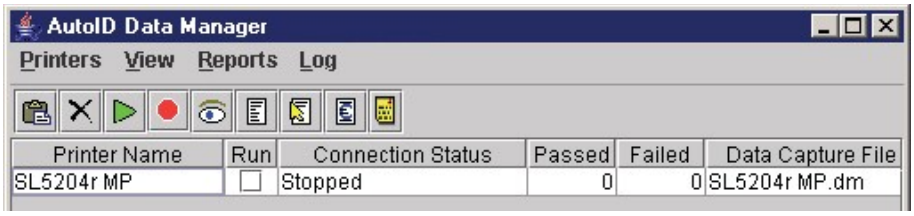



**Figure 246 A Printer Added to the Printer List**

The AutoID Data Manager application remembers all printers in the printer list, even after you close the application.

**NOTE:** The only way to remove a printer from the printer list is to select it and click the ✕ (delete printer) button or select **Printers ▶ Remove Printers Selected from List**.

### Persistent Collection Mode

Check the **Run** check box to place the printer in persistent collection mode. In this mode, the printer will always connect and collect telemetry data without intervention. (Normally, you must start the collection of telemetry data by selecting the printer and clicking the ▷ start collection button.)

**NOTE:** Checking or unchecking the **Run** check box immediately starts or stops the printer(s) from collecting telemetry data.

The next time you launch the AutoID Data Manager application, the AutoID Data Manager will immediately attempt to connect and collect telemetry data from all printers in persistent collection mode.

### Data Capture File

A Data Capture file is created for every printer added to the printer list. All telemetry data is saved to this file, unless an external database is used to collect data.

To change the name or location of the Data Capture file, select

**Printers ▶ Select Data Capture File**. See Figure 247. When you change the Data Capture file name, all telemetry data is reset for the new file. Any existing telemetry data remains saved in the old Data Capture file name.

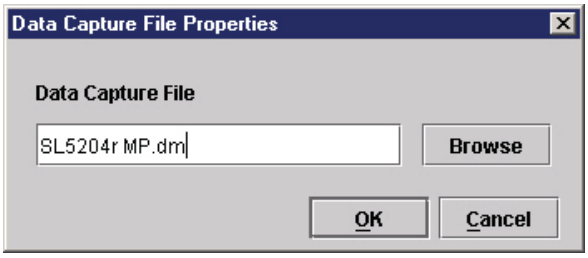



**Figure 247 Data Capture File Properties Dialog Box**

If you change the Data Capture file name to a name that already exists, the telemetry data stored in the existing file will not be erased. All new telemetry data will be appended to the existing file.

**NOTE:** You cannot change the Data Capture file name while telemetry data is being captured.

The AutoID Data Manager never erases the Data Capture file. To delete a Data Capture file, locate and delete the file from the default location, program installation directory, or where it was created (it has a **.dm** extension).

## Report Generation

To export telemetry data to an ASCII file in either CSV or XML format, select a printer or group of printers and then select one of the report generation options (see Reports on page 252).

After the report is created, a dialog box appears giving the status, location, and name of the report. See Figure 248. Write down this information for future reference. Click **OK** to close the dialog box.

**Figure 248 Report Creation Completed Dialog Box**

## Report Parameters

To export the telemetry data to an ASCII file, select a printer or group of printers, and then select either of the Reports options. The AutoID Data Report Parameters dialog box opens. See Figure 249.

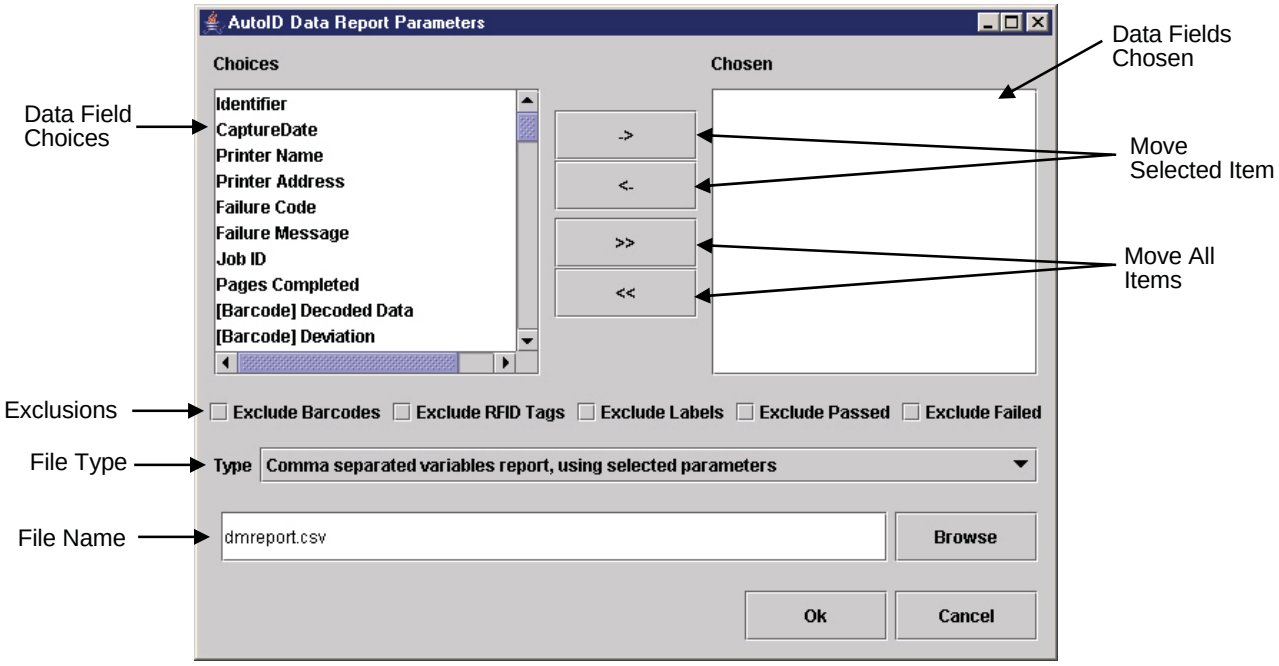



**Figure 249 The AutoID Data Report Parameters Dialog Box**

Select the data fields you wish to include in the report (one at a time) and click **->**.

**NOTE:** You can select multiple data fields by using the **Ctrl** or **Shift** key.

If [Barcode] precedes the data field name, then it is exclusively for bar codes.

If [RFID] precedes the data field name, then it is exclusively for RFID tags.

If neither precedes the data field name, then it is a label field used for both bar codes and RFID tags.

You can later remove a data field from the report by selecting it and clicking **<-**. If you want to move all of them at once, click **>>** or **<<**. See Data Fields on page 257.

To exclude bar codes, RFID tags, labels, passed items, or failed items from the report, check the corresponding check box.

Using the Type down arrow, select a report type: comma separated variable or XML. See Comma Separated Variable Report on page 263 and XML Report on page 263.

Name the report using the Output File field. The default location is the program installation directory. Click **Browse** to save the file in a different location.

Once your report is set up, click **Ok** to save the report parameters.

## Viewing Telemetry Data

**NOTE:** You cannot view telemetry data if the data is being sent to an external database. Data must be read using the database program. See Telemetry Data Export To 3rd Party Databases on page 264.

To view collected data from a printer, double-click the printer in the printer list (or select the printer and select **View** Y **Data from Selected Printer**). The AutoID Data Viewer window opens and collected telemetry data displays. See Figure 250.

### Identifier

When viewing telemetry data, there is an identifier consisting of a letter followed by two numbers and separated by a decimal point. The letter **B** represents a bar code, **R** an RFID tag, and **L** a label.

For bar code and RFID tag identifiers (B and R), the first number represents the label number, and the second represents the bar code or RFID tag sequence number within the label. For label identifiers (L), the first number represents the label number, and the second specifies how many bar codes are on the label.

**NOTE:** Since a label typically has one RFID tag, this count is not included in the label identifier (L).

When viewing telemetry data, **B3.2** denotes the second bar code in the third label. **R5.1** denotes the first RFID tag in the fifth label. **L5.4** denotes the end of the fifth label, and the label has four bar codes. See Figure 250.

**NOTE:** The printer verifies the RFID tag before printing any bar codes. If the RFID tag fails, then the label automatically fails without any printed bar codes. See **R4.1** and **L4.0** in Figure 250.

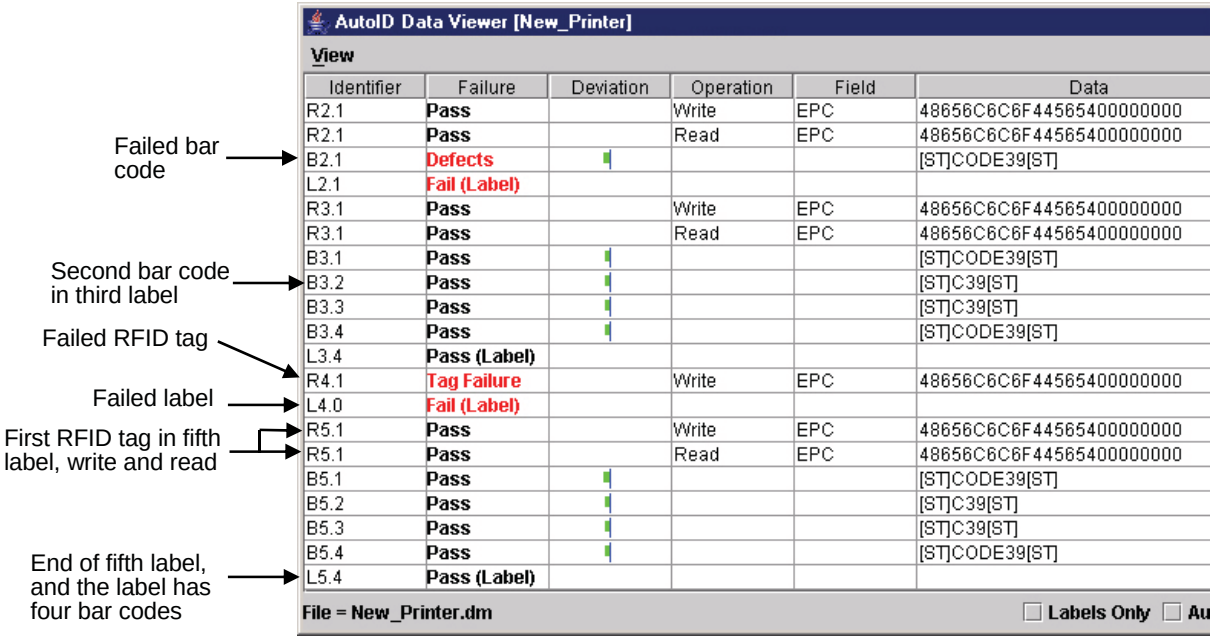



**Figure 250 Sample Telemetry Data**

### Viewing Detailed Data

To view more detailed information about a label, bar code, or RFID tag, double-click the desired item under Identifier in the AutoID Data Viewer window. See Figure 251, Figure 252, Figure 253, and Figure 254.

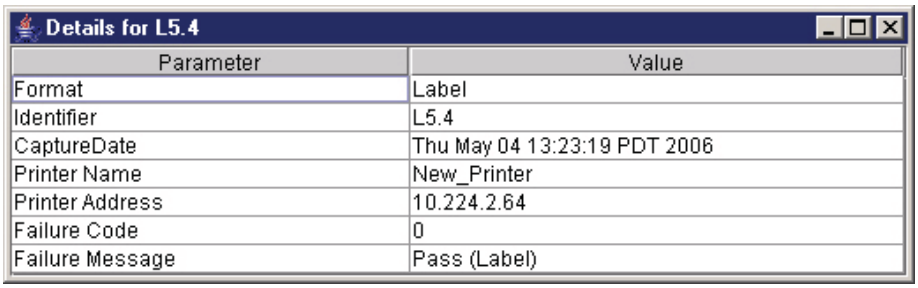



**Figure 251 Detailed Label Data**

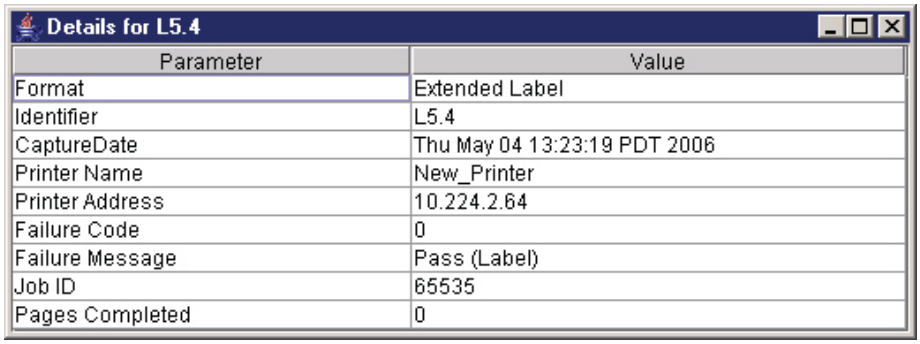



**Figure 252 Detailed Extended Label Data**

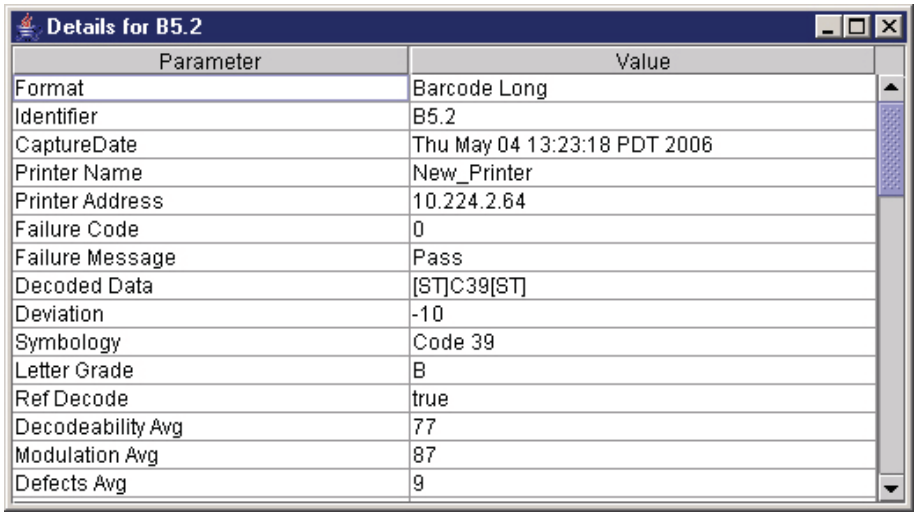



**Figure 253 Detailed Barcode Long Data**

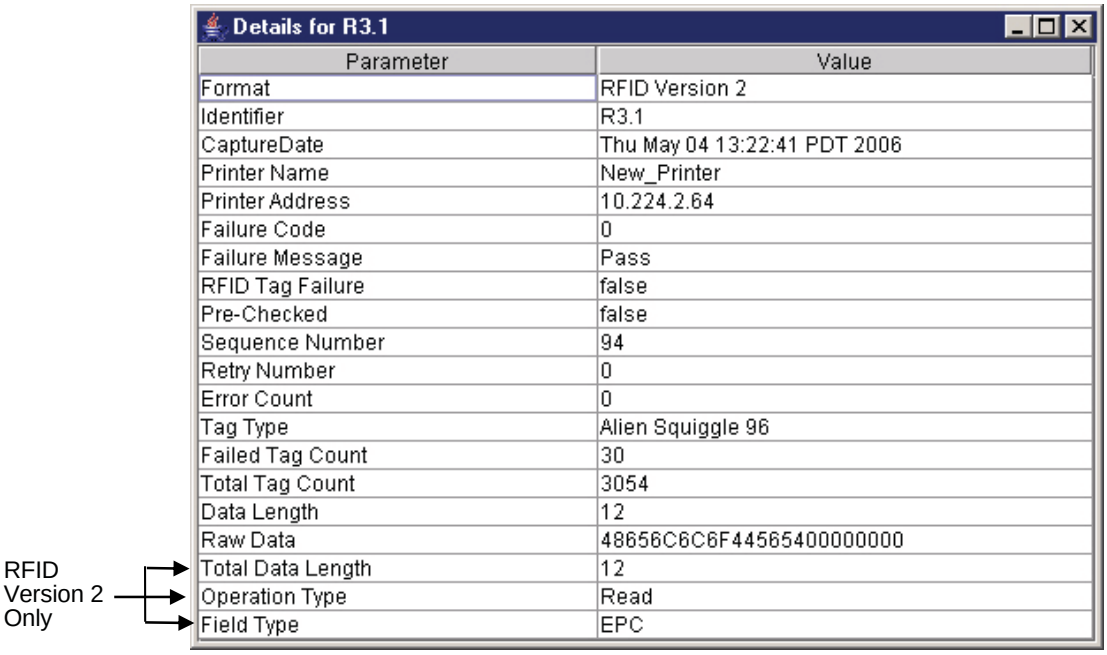



**Figure 254 Detailed RFID Version 2 Tag Data**

### Data Fields

**NOTE:** For the correct syntax for using the data field names in databases, see Data Field Names on page 271.

Over 70 data fields are available that describe bar code or RFID tag telemetry data. The first nine are defined as follows:

#### 1. Format

This defines the type of record using an integer value.

| Value | Description |
|---|---|
| Label | label status, older firmware (no longer supported) |
| Extended Label | label status, newer firmware |
| Barcode Short | bar code data, short format |
| Barcode Validation | bar code data, validation format |
| Barcode Long | bar code data, long format |
| RFID Version 1 | RFID version 1 tag |
| RFID Version 2 | RFID version 2 tag |

#### 2. Identifier

This identifies the RFID tag, bar code, and label number. See Identifier on page 255.

#### 3. CaptureDate

This indicates the date and time the record was captured, using local time, in the format: Day, Month, Date, Time (00:00:00), Time Zone, and Year. See Figure 255.

Thu May 04 13:22:41 PDT 2006

**Figure 255 CaptureDate Field Format**

If the data is being sent to an external database, it is represented by a fixed format string defined as MM-dd-yyyy_HH:mm:SS where:

MM is the month of the year (01-12)

dd is the day of the month (01-31) yyyy is the year

HH is the hour of the day (00-23)

mm is the minutes of the hour

SS is the seconds of the minute

**4. Printer Name**

This indicates the printer name as it appears in the Printer List window (see Figure 244 on page 251).

**5. Printer Address**

This is the IP address of the printer.

**6. Failure Code**

**Bar Code**

This is the hex value assigned for each type of failure, shown below. See 7. Failure Message on page 259.

| Failure Code (Hex) | Failure Code (Binary) | Failure Message |
|---|---|---|
| 0000 | 0000 0000 0000 0000 | No error |
| 0001 | xxxx xxxx xxxx xxx1 | PDF 417 Gap |
| 0002 | xxxx xxxx xxxx xx1x | Decodeability |
| 0004 | xxxx xxxx xxxx x1xx | Defect |
| 0008 | xxxx xxxx xxxx 1xxx | Percent Decode |
| 0010 | xxxx xxxx xxx1 xxxx | Quiet Zone |
| 0020 | xxxx xxxx xx1x xxxx | (Symbol) Contrast |
| 0040 | xxxx xxxx x1xx xxxx | Encodation |
| 0080 | xxxx xxxx 1xxx xxxx | Checksum |
| 0100 | xxxx xxx1 xxxx xxxx | Calibration |
| 0200 | xxxx xx1x xxxx xxxx | Overall Grade Failure |
| `0400 | xxxx x1xx xxxx xxxx | Internal Data Format Error |
| 0800 | xxxx 1xxx xxxx xxxx | Modulation |
| 1000 | xxx1 xxxx xxxx xxxx | Minimum Reflectance |
| 2000 | xx1x xxxx xxxx xxxx | Minimum Edge Contrast |
| 4000 | x1xx xxxx xxxx xxxx | Future use |
| 8000 | 1xxx xxxx xxxx xxxx | Future use |

**NOTE:** The hex values listed above reflect single failures. Multiple failures will create additional hex values based on the binary weighting shown.

For example, the hex value **0042** (or binary **0000 0000 0100 0010**) represents both the Encodation and Decodeability failures.

**RFID**

This is the hex value assigned for an RFID failure.

0 = no RFID failure

1 = RFID failure

**7. Failure Message**

**Bar Code**

Failure data is grouped into different types of failure, each of which defines a bar code problem.

- **Checksum:** This occurs when the bar code is not properly encoded with checksum digits.
- **Decodeability:** This occurs when the difference between wide and narrow elements is too close to reliably discern. This is generally an indication of an improperly set heat, speed, or pressure combination, or the loss of heating element.
- **Defects:** This is a measure of unexpected dark spots in spaces or light spots in bars. It is generally an indication of a poor ribbon or media combination, a burnt pixel, or the printhead needs cleaning.
- **Encodation:** This occurs when the bar code is not properly encoded. For example, a checksum is incorrect, a required number of characters is not met, or required terminator characters are missing. This is usually an indication of poor form or host application design.
- **Internal Data Format Error:** The bar code data format is invalid.
- **PDF 417 Gap:** This occurs when there are large gap damages (such as ribbon wrinkle, voids, spots, etc.) within the PDF 417 data body code.
- **Percent Decode:** This is a measure of consistency throughout the height of the bar code which indicates the number of good scans as a percentage of total scans. This is usually an indication of large blemishes within the code, such as with a wrinkle.
- **Quiet Zone:** This occurs when the minimum blank zone surrounding the bar code has not been met. This can typically occur in poorly designed forms where bar codes are placed too close to other elements, or the bar code is too close to an edge of the media, or the position of the media is shifting.
- **(Symbol) Contrast:** This occurs when the contrast between bars and spaces is not sufficient. This can be due to excessively light printing from too little heat on the printhead. It is also caused by colored media or ribbons.
- **Modulation:** This occurs when the ratio of the Minimum Edge Contrast and Symbol Contrast is below 40%.
- **Minimum Reflectance:** This occurs when the reflectance value for at least one bar in a bar code is not half or less than the highest reflectance value for a space.
- **Minimum Edge Contrast:** This error occurs when the Minimum Edge Contrast value is less than 15%.

  In a bar code, each transition from a space to a bar (or a bar to a space) is an edge whose contrast is the difference between the peak values in the space and bar reflectance. Each edge in the bar code is measured, and the edge that has the minimum contrast is the Minimum Edge Contrast.

It is possible that more than one failure message can be reported in a bar code report. However, the printer can display only one error message at a time. Thus, when multiple failures are detected, only one message displays and the rest are ignored, based on the following failure priority hierarchy.

| Priority | Failure Message | Operator Panel Message |
|---|---|---|
| 1 (highest) | Encodation | Bar code improper data format |
| 2 | Checksum | Checksum Failure |
| 3 | Quiet Zone | Bar code quiet zone too small |
| 4 | (Symbol) Contrast | Contrast too low Check media |
| 5 | Percent Decode | Poor scanning Check media |
| 6 | Defects | Poor scanning Inspect head |
| 7 | Decodeability | Unscannable code Check media |
| 8 | PDF 417 Gap | Poor scanning Check media |
| 9 | Calibration | Calibratio n Warning |
| 10 | Overall Grade Failure | Overall Grade Failure |
| 11 | Internal Data Format Error | Error Data invalid |
| 12 | Modulation | Modulation Fail Check head&heat |
| 13 | Minimum Reflectance | RMin Fail Check head&heat |
| 14 (lowest) | Minimum Edge Contrast | Edge Ctst Fail Check head&heat |

Other Error Messages

- **Calibration Warning:** In some cases, the validator can determine if it is out of calibration. When this occurs, the validator will communicate this condition as part of a bar code report. This condition is considered a warning and the printer will not stop.

**NOTE:** If a bar code failure is also reported in the same bar code report, then failure error handling will take precedence.

When the calibration warning condition is encountered, the message “Validator needs calibration” displays. Normal operation will continue during this warning. To clear the message, press the **PAUSE** key.

Once the message has been cleared, perform the calibration procedure (see “Calibration” in the *Online Data Validator User’s Manual*). Whether or not you perform a calibration will be unknown to the printer. Once the warning message has been cleared, the printer will assume that any problem has been resolved and will function as normal.

- **Overall Grade Failure:** This is an overall data validation failure. One or more of the following errors has occurred: Decodeability, Percent Decode, Defects, Modulation, Minimum Edge Contrast (EC Min), Minimum Reflectance (Rmin), and/or (Symbol) Contrast.

  The printer’s next action depends on the error action setting. If the Stop mode is selected, printing resumes where the printing stopped. If the Overstrike or Reprint modes are selected, the printer assumes the last label failed and takes the appropriate action. See “Error Action” in the *Online Data Validator User’s Manual*.

**RFID**

This is the message assigned for an RFID failure.

Pass = no RFID failure

Tag Failure = RFID failure

**8. Job ID**

The default is 65535. For future use.

**9. Pages Completed**

The default is 0. For future use.

**Bar Code Data Fields**

These are the available bar code data fields:

| | |
|---|---|
| Decoded Data | Horizontal Position |
| Deviation | Vertical Position |
| Symbology | Good Scans on Code |
| Letter Grade | Total Scans on Code |
| Ref Decode | Good Quiet Zones |
| Decodeability Avg | Lead QZ In X’s |
| Modulation Avg | Trail QZ In X’s |
| Defects Avg | Sync State |
| Edge Contrast Avg | X Units Times 10 |
| Rmin/Rmax Avg | Percent Good Global Thresholds |
| Symbol Contrast Avg | PDF 417 Gap Failure |
| PCS Avg | Decodeability Failure |
| R(White) Avg | Defects Failure |
| R(Black) Avg | Percent Decode Failure |
| Ratio Avg | Quiet Zone Failure |
| Bar Deviation Avg | Symbol Contrast Failure |
| Minimum Bar Dev Avg | Encodation Failure |
| Maximum Bar Dev Avg | Checksum Failure |
| Quiet Zone | Calibration Warning |

| | |
|---|---|
| Percent Decode Average | Overall Grade Failure |
| Absolute X Dimension | Internal Data Format Error |
| Overall Symbol Grade Avg | Modulation Failure |
| Direction | Minimum Reflectance Failure |
| Checksum | Minimum Edge Contrast Failure |
| Self Check | Disregard Quiet Zone Failures |
| Symbology and Addendum | Disregard Contrast Failures |

For an introductory description of the bar code data fields, see the *Layman's Guide to ANSI X3.182*.

For a complete description, see the *ANSI INCITS 182-1990 (R2002) Guideline for Bar Code Print Quality* available from the American National Standards Institute at **http://www.ansi.org/**.

**RFID Version 1 Data Fields**

These are the available RFID Version 1 data fields:

RFID Tag Failure

Pre-Checked

Sequence Number

Retry Number

Error Count

Tag Type

Failed Tag Count

Tag Write Count

Data Length

Raw Data

Refer to the *RFID Labeling Reference Manual* for a description of these fields.

**RFID Version 2 Data Fields**

These are the available RFID Version 2 data fields:

RFID Tag Failure

Pre-Checked

Sequence Number

Retry Number

Error Count

Tag Type

Failed Tag Count

Tag Write Count

Data Length

Raw Data

Total Data Length

Operation Type

Field Type

Refer to the *RFID Labeling Reference Manual* for a description of these fields.

### Comma Separated Variable Report

The comma separated variable report format can be easily imported into many database and spreadsheet programs.

The report consists of a description line (the first line in the report) that contains the names of the fields in the order of the data. Each field is separated by a comma. The exported data follow the description line. Each record of the report is placed on a separate line. See Figure 256.

```
CaptureDate,Type,Printer Name,Failure Message,Decoded Data,RFID Tag Failure,Tag Type,Failed Tag
10:36:20,4,SL5304e MP,Tag,0000162000000001,True,5,3,19,0000162000000001■07-14-2004 10:36:20,0,S
10:36:21,4,SL5304e MP,Pass,0000162000000001,False,5,3,20,0000162000000001■07-14-2004 10:36:22,0
10:36:22,4,SL5304e MP,Pass,0000162000000002,False,5,3,21,0000162000000002■07-14-2004 10:36:23,0
10:36:23,4,SL5304e MP,Pass,0000162000000003,False,5,3,22,0000162000000003■07-14-2004 10:36:24,0
10:36:24,4,SL5304e MP,Pass,0000162000000004,False,5,3,23,0000162000000004■07-14-2004 10:36:24,0
10:36:25,4,SL5304e MP,Pass,0000162000000005,False,5,3,24,0000162000000005■07-14-2004 10:36:25,0
10:36:26,4,SL5304e MP,Pass,0000162000000006,False,5,3,25,0000162000000006■07-14-2004 10:36:26,0
10:36:27,4,SL5304e MP,Pass,0000162000000007,False,5,3,26,0000162000000007■07-14-2004 10:36:27,0
10:36:27,4,SL5304e MP,Pass,0000162000000008,False,5,3,27,0000162000000008■07-14-2004 10:36:28,0
10:36:28,4,SL5304e MP,Pass,0000162000000009,False,5,3,28,0000162000000009■07-14-2004 10:36:29,0
10:36:29,4,SL5304e MP,Pass,0000162000000010,False,5,3,29,0000162000000010■07-14-2004 10:36:30,0
10:36:30,4,SL5304e MP,Pass,0000162000000011,False,5,3,30,0000162000000011■07-14-2004 10:36:31,0
10:36:31,4,SL5304e MP,Pass,0000162000000012,False,5,3,31,0000162000000012■07-14-2004 10:36:31,0
10:36:32,4,SL5304e MP,Pass,0000162000000013,False,5,3,32,0000162000000013■07-14-2004 10:36:32,0
10:36:33,4,SL5304e MP,Pass,0000162000000014,False,5,3,33,0000162000000014■07-14-2004 10:36:33,0
```

**Figure 256 Sample Comma Separated Variable Report**

### XML Report

The XML report format conforms to a well formed XML document as defined in *W3C Recommendation, Extensible Markup Language (XML) 1.0* available from the World Wide Web Consortium at **http://www.w3c.org/**.

You can view the XML report using any XML viewer. See Figure 257.

```
<?xml version="1.0" encoding="UTF-8"?>
<PrintronixDataValidation Version="1.0" SaveDate="July 14, 2004 10:38:30 AM PDT">
  <Data>
    <Label CaptureDate="07-14-2004 10:36:22" Type="0" PrinterName="SL5304e MP" FailureMess.
      <RFID CaptureDate="07-14-2004 10:36:21" Type="4" PrinterName="SL5304e MP" FailureMes:
RfidTagFailure="False" RfidTagType="5" RfidFailedTagCount="0" RfidTotalTagCount="20" RfidR.
    </Label>
    <Label CaptureDate="07-14-2004 10:36:23" Type="0" PrinterName="SL5304e MP" FailureMess.
      <RFID CaptureDate="07-14-2004 10:36:22" Type="4" PrinterName="SL5304e MP" FailureMes:
RfidTagFailure="False" RfidTagType="5" RfidFailedTagCount="0" RfidTotalTagCount="21" RfidR.
    </Label>
    <Label CaptureDate="07-14-2004 10:36:24" Type="0" PrinterName="SL5304e MP" FailureMess.
      <RFID CaptureDate="07-14-2004 10:36:23" Type="4" PrinterName="SL5304e MP" FailureMes:
RfidTagFailure="False" RfidTagType="5" RfidFailedTagCount="0" RfidTotalTagCount="22" RfidR.
    </Label>
    <Label CaptureDate="07-14-2004 10:36:24" Type="0" PrinterName="SL5304e MP" FailureMess.
      <RFID CaptureDate="07-14-2004 10:36:24" Type="4" PrinterName="SL5304e MP" FailureMes:
RfidTagFailure="True" RfidTagType="5" RfidFailedTagCount="1" RfidTotalTagCount="23" RfidRa
    </Label>
```

**Figure 257 Sample XML Report**

### Standard RFID Text Report

The Standard RFID Text Report is a predefined set of RFID data fields written in ASCII text. See Figure 258.

```
*************************************************************************************************************
Printer Name          Printer Address
Thermal Warehouse     10.224.2.64

                      Total Read/  Label  RFID   Failed  Data
                       Tag  Write  Event   Tag     Tag   Byte
    Encoded Date      Count (R/W) Number Encoded  Count Length    Tag Type          Raw Data

 08-08-2007 01:04:46      1  (W)     40   Pass       0    12 Alien Squiggle 96 48656C6C6F44565400000000
 08-08-2007 01:04:46      1  (R)     41   Pass       0    12 Alien Squiggle 96 48656C6C6F44565400000000
 08-08-2007 01:04:48      2  (W)     42   Pass       0    12 Alien Squiggle 96 48656C6C6F44565400000000
 08-08-2007 01:04:48      2  (R)     43   Pass       0    12 Alien Squiggle 96 48656C6C6F44565400000000
 08-08-2007 01:04:51      3  (W)     44   Pass       0    12 Alien Squiggle 96 48656C6C6F44565400000000
 08-08-2007 01:04:51      3  (R)     45   Pass       0    12 Alien Squiggle 96 48656C6C6F44565400000000
 08-08-2007 01:04:53      4  (W)     46   Pass       0    12 Alien Squiggle 96 48656C6C6F44565400000000
 08-08-2007 01:04:53      4  (R)     47   Pass       0    12 Alien Squiggle 96 48656C6C6F44565400000000
 08-08-2007 01:04:56      5  (W)     48   Pass       0    12 Alien Squiggle 96 48656C6C6F44565400000000
 08-08-2007 01:04:56      5  (R)     49   Pass       0    12 Alien Squiggle 96 48656C6C6F44565400000000

Total Tag Count For Selected Time Period        => 5
Total Failed Tag Count For Selected Time Period => 0
Percent Yield For Selected Time Period          => 100%


*************************************************************************************************************

End Of Report
```

**Figure 258 Sample Standard RFID Text Report**

# Telemetry Data Export To 3rd Party Databases

The AutoID Data Manager allows you to export telemetry data to 3rd party databases using the JDBC interface. To export telemetry data, you need to obtain either a JDBC or an ODBC driver from your database vendor.

When configured, the 3rd party database opens when the Data Validation Printers List window opens, and closes when the window closes. Any telemetry data collected by the AutoID Data Manager is sent to the database.

**NOTE:** All external database errors are written to the file **odv_db.err**, located in the program installation directory.

The database connection is defined by four Java system property definitions that are placed in a global properties file called **pm.pro**. This file must be placed in the program installation directory.

**NOTE:** The **pm.pro** file is read only when the AutoID Data Manager initially loads. Any changes made to **pm.pro** are not reflected in the AutoID Data Manager until you relaunch the application.

Java system properties are name/value pairs, where the name and value are separated by an equal sign. The following four properties must be defined:

1. OdvJdbcDriver (Driver Class Property)

   This is the name of the JDBC driver classfile. This value depends on the type of database being used, and is provided by the database or driver manufacturer. Also, some drivers require a JAR file be placed in the program installation classpath. This is done by renaming the driver JAR file to **jdbcdriver.jar** and placing it in the **lib** subdirectory found in the program installation directory. If you are using an ODBC driver, then you need to specify the JDBC-ODBC bridge supplied by Sun Microsystems® called **sun.jdbc.odbc.JdbcOdbcDriver**.

2. OdvJdbcUrl (Database URL)

This is the Uniform Resource Locator (URL) that describes the database being used. It depends on the database and driver being used, and its format is defined by the database or driver vendor.

The URL is a single line of text that follows the HTTP convention. It begins with the service identifier, **jdbc:**. Next, the service name is appended. For a JDBC compatible database, such as MySQL, the URL is **jdbc:mysql:**. For a normal ODBC compatible database, the URL is **jdbc:odbc:**.

Following the service name is the URL of the database, the user ID, and password used to log into the database.

3. OdvJdbcDbName (Database Name)

   This is the name of the database table created to store the telemetry values. For a standard database, it is a single word. For an Excel® spreadsheet, it must be delimited by square brackets, e.g., **[Sheet1$]**.

4. OdvJdbcDbFields (Database Fields List)

   This is a comma separated list of database field names that correspond to the fields defined when the database or spreadsheet was created. Any field names in this list must match an AutoID property name.

**IMPORTANT** **The field names are case-sensitive. Make sure the field names selected are spelled correctly and are set to the maximum field sizes as shown in the tables on page 271.**

See Data Field Names on page 271 for a list of the acceptable AutoID property names (database name) that can be used.

5. OdvJdbcPreparedStatement (Optional property)

   This optional property allows the user to explicitly define the SQL prepared statement, as defined in the JDBC specification. If it is not defined, a standard SQL **INSERT** statement is created using the table name (from the OdvJdbcDbName property) and the fields (from the OdvJdbcDbFields property).

   For example, a table named **mytable** with the fields **CaptureDate**, **FailureCode**, and **DecodedData** would create the following statement:

   INSERT INTO mytable(CaptureDate,FailureCode,DecodedData) VALUES(?,?,?)

## Examples Of Property Definitions

**NOTE:** For all databases, make sure that zero length strings are allowed.

The following are some examples of property definitions. Printronix does not guarantee that the examples shown will work for your database. Each database can have different drivers and connectivity requirements. The examples are provided to assist you in starting your property definition file. In the examples, the following values are used:

Database = odv

User ID = odvuser

Password = odvpassword

Table name = events

**MySQL**

OdvJdbcDriver=org.gjt.mm.mysql.Driver

OdvJdbcUrl=jdbc:mysql://mymachine/odv?user=odvuser&password= odvpassword

OdvJdbcDbName=events OdvJdbcDbFields=CaptureDate,FailureCode,DecodedData

**SAP**

OdvJdbcDriver=com.sap.dbtech.jdbc.DriverSapDB

OdvJdbcUrl=jdbc:sapdb:odv?user=odvuser&password=odvpassword

OdvJdbcDbName=events

OdvJdbcDbFields=CaptureDate,FailureCode,DecodedData

**Microsoft® Access™**

OdvJdbcDriver=sun.jdbc.odbc.JdbcOdbcDriver

OdvJdbcUrl=jdbc:odbc:odv;UID=odvuser&PWD=odvpassword

OdvJdbcDbName=events

OdvJdbcDbFields=CaptureDate,FailureCode,DecodedData

**NOTE: Date** is a reserved word in Microsoft Access.

**Microsoft Excel**

OdvJdbcDriver=sun.jdbc.odbc.JdbcOdbcDriver

OdvJdbcUrl=jdbc:odbc:odv

OdvJdbcDbName=[Sheet1$]

OdvJdbcDbFields=CaptureDate,FailureCode,DecodedData

## Example Exporting Telemetry Data To A Microsoft Access Database

This example shows how to create an Access database, connect it to the AutoID Data Manager, and have the AutoID Data Manager export captured telemetry data to the database.

To create an Access database:

1. Open Microsoft Access.
2. Select **File ▶ New Database** to create a new database named **odv**. (Use the **Blank** database template.)
3. Click **New** to create a new table. Select **Design View**.
4. Name the first field **ID** and define it as an **AutoNumber** field. This is required since the database must have a unique key value for each record. Each record sent from the AutoID Data Manager will be appended to the database and the data in this field will be one greater than the value in the previous record.

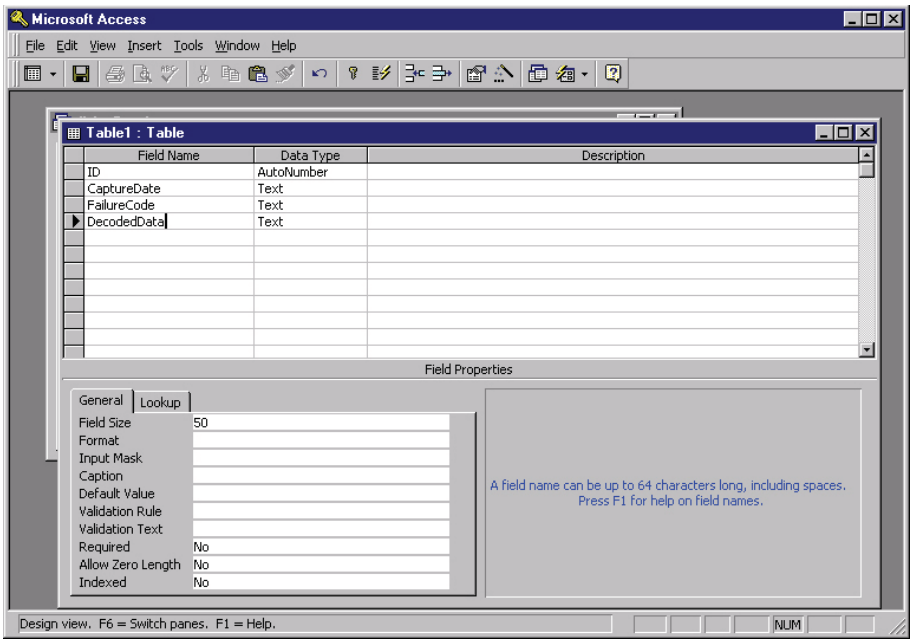



**Figure 259 Adding Fields Using Design View in Microsoft Access**

5. Name the next three fields **CaptureDate**, **FailureCode**, and **DecodedData**, and define them as **Text** data types. See Figure 259.

**NOTE:** Beginning with the second field, the field names must match the order of the fields specified in the OdvJdbcDbFields property. In this example, the OdvJdbcDbFields would be defined as OdvJdbcDbFields=CaptureDate,FailureCode,DecodedData.

6. Save the table as **events**.
7. Save the database as **odv**.
8. Open the Control Panel and double-click **Data Sources (ODBC)**.

**NOTE:** In Windows® 2000, double-click Administrative Tools, then Data Sources (ODBC).

In Windows XP, click Performance and Maintenance, then Administrative Tools, then Data Sources (ODBC).

9. Click the **System DSN** tab.
10. Click **Add** to create a new System DSN (Data Source Name) entry. This way the database can be accessed by the AutoID Data Manager running on a workstation that is not running the database.
11. Select **Microsoft Access Driver** from the driver list and click **Finish**. (If the driver is not listed, you need to install the driver before continuing.)

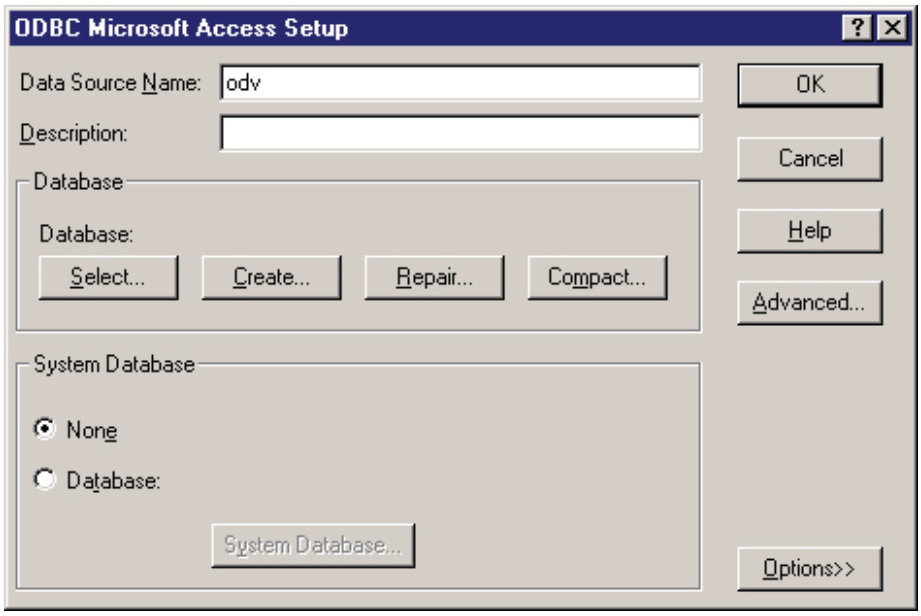



**Figure 260 Entering the Data Source Name**

12. Type **odv** in the **Data Source Name** field. See Figure 260.
13. Click **Select** to specify the **odv** database that you created.
14. Click **Advanced** to specify the username (odvuser) and password (odvpassword) to access the database.
15. Using Notepad, create an AutoID Data Manager properties file named **pm.txt** that contains the following text:

OdvJdbcDriver=sun.jdbc.odbc.JdbcOdbcDriver

OdvJdbcUrl=jdbc:odbc:odv;UID=odvuser&PWD=odvpassword

OdvJdbcDbName=events

OdvJdbcDbFields=CaptureDate,FailureCode,DecodedData

16. Rename the file **pm.txt** to **pm.pro** and place it into the program installation directory.
17. Run the AutoID Data Manager and collect the telemetry data. The collected telemetry data will be inserted into the **odv** database.

## Exporting Telemetry Data To A Microsoft SQL Database

Here is the set up for the Microsoft SQL database using ODBC connectivity:

1. Using Notepad, create an AutoID Data Manager properties file named **pm.txt** that contains the following text:

   # Microsoft SQL Connection Using ODBC

   OdvJdbcDriver=sun.jdbc.odbc.JdbcOdbcDriver

   OdvJdbcUrl=jdbc:odbc:odvsql

   OdvJdbcDbName=events

   OdvJdbcDbFields=PrinterAddress,DecodedData

2. Rename the file **pm.txt** to **pm.pro** and place it into the program installation directory.
3. SQL database name is **odvsql**.

4. Table name is **events**.
5. Field names: **PrinterAddress, DecodedData**
6. Make sure the SQL ODBC driver is in the Windows Data Sources – ODBC. You can use either Client or Server, dependiing on where the AutoID Data Manager resides.
7. Use the same Jar files from the default AutoID Manager.
8. Make sure the SQL database has the same field names as **pm.pro**.
9. Make sure that you use **window authentication**.
10. Run the AutoID Data Manager and collect the telemetry data. The collected telemetry data will be inserted into the **odvsql** database.

# User Fault Generation

User fault generation is a feature that allows 3rd party applications to stop the printing operation and display a sixteen character message on the printer's operator panel.

Using this feature in conjunction with the telemetry data export function allows external programs to implement a closed-loop telemetry data solution. If the external program detects an error, it can terminate all further printing to reduce bad labels and label stock waste.

The AutoID Data Manager provides this feature through the XML remote control interface. If a properly formatted XML message is sent to the AutoID Data Manager XML port, it will cause the AutoID Data Manager to issue a printer fault command to the specified printer. The fault command will cause the printer to go offline and display a 16 character text message on the printer's operator panel.

The following is the proper XML message format needed to generate a user fault:

^B

<ppmXML>

    <PrinterFault printerName="myprinter" type="some message" />

</ppmXML>

^F

where:

**myprinter** is the name of the printer specified in the printer database

**some message** is the text message to be displayed on the printer's operator panel.

**NOTE:** The maximum length of the text message is 16 characters. Messages longer than 16 characters will be truncated.

## How To Generate A User Fault

To generate a user fault, the AutoID Data Manager must be running. In addition, a properly formatted XML message must be transmitted to the XML server port defined in the printer database Preferences.

The default XML server port is 8081, but since this port number is user configurable, it is important to verify the XML server port number before sending the user fault message.

To verify the setting of the XML server port:

1. Open PNE.
2. Select **File ▶ Preferences**.
3. Click the **Servers** tab.

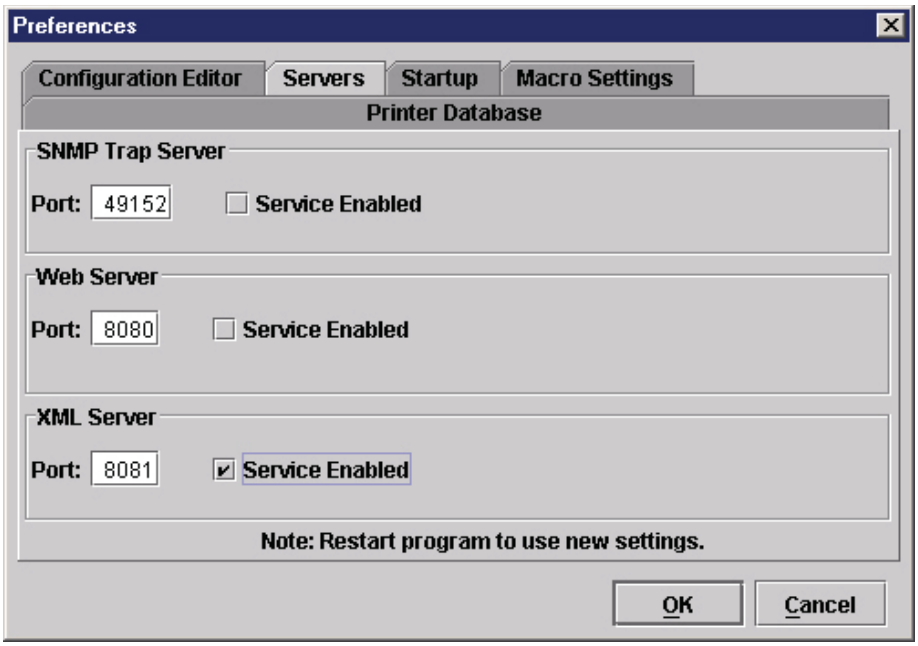



**Figure 261 Enabling the XML Server Port**

4. Make sure the **Service Enabled** check box is checked under **XML Server**. See Figure 261.

**NOTE:** If the box was not checked, you must quit and restart PNE and the AutoID Data Manager to use the new setting.

5. Record the port number used by the XML server.

To send an XML message to the AutoID Data Manager, you need to open a telnet session to the XML server port. Once you have opened a telnet session, you can type in the XML message to generate the printer fault.

**NOTE:** To automate the fault generation process, you can develop an application that will send the properly formatted XML message.

# Data Field Names

The following is a list and of all available telemetry data fields. The first column lists the names of the data fields as they appear in the Report Parameters window (page 254) and the detailed label, bar code, and RFID telemetry data windows (page 255). The second column lists the names of the data fields for databases.

## Label Data Fields

**Table 15 Label Data Fields**

| Name | Database Name | Maximum Database Field Size (Bytes) | Description |
|---|---|---|---|
| Format | Format | 18 | Format type: Barcode Short, Barcode Long, Barcode Validation, Label, Label Extended, RFID Version 1, RFID Version 2 |
| Identifier | Identifier | 12 | The identifier is a type letter, a label number, a period, and sequence number for that label. |
| CaptureDate | CaptureDate | 19 | Date the data was captured. Formatted as 12/30/2008 12:59:59 |
| Printer Name | PrinterName | 32 | The name of the printer defined in the printer database. |
| Printer Address | PrinterAddress | 15 | The IP address of the printer, either a dotted four octet number or a DNS resolved name. |
| Failure Code | FailureCode | 5 | The failure code number. Barcode or RFID failure codes are defined in respective product specification.<br>Label failure codes:<br>bit 0 = failure<br>bit 1 = quiet zone failures ignored<br>bit 2 = contrast failures ignored |
| Failure Message | FailureMessage | 55 | Text describing the highest priority failure. |

**Table 16 Extended Label Format Data Fields**

| Name | Database Name | Maximum Database Field (Bytes) |
|---|---|---|
| Format | Format | 18 |
| Identifier | Identifier | 12 |
| Capture Date | CaptureDate | 19 |
| Printer Name | PrinterName | 32 |
| Printer Address | PrinterAddress | 15 |
| Failure Code | FailureCode | 5 |
| Failure Message | FailureMessage | 55 |
| Job ID | JobID | 5 |
| Pages Completed | PagesCompleted | 4 |

## Bar Code Data Fields

**Table 17 Bar Code Data Fields**

| Name | Database Name | Maximum Database Field Size (Bytes) |
|---|---|---|
| Decoded Data | DecodedData | 256 |
| Deviation | Deviation | 3 |
| Symbology | Symbology | 25 |
| Letter Grade | LetterGrade | 1 |
| Ref Decode | RefDecode | 5 |
| Decodeability Avg | DecodeabilityAvg | 3 |
| Modulation Avg | ModulationAvg | 3 |
| Defects Avg | DefectsAvg | 3 |
| Edge Contrast Avg | EdgeContrastAvg | 3 |
| Rmin/Rmax Avg | RminRmaxAvg | 3 |
| Symbol Contrast Avg | SymbolContrastAvg | 3 |
| PCS Avg | PCSAvg | 3 |
| R(White) Avg | RWhiteAvg | 3 |
| R(Black) Avg | RBlackAvg | 3 |

**Table 17 Bar Code Data Fields**

| Name | Database Name | Maximum Database Field Size (Bytes) |
|---|---|---|
| Ratio Avg | RatioAvg | 3 |
| Bar Deviation Avg | BarDeviationAvg | 3 |
| Minimum Bar Dev Avg | MinimumBarDevAvg | 3 |
| Maximum Bar Dev Avg | MaximumBarDevAvg | 3 |
| Quiet Zone | QuietZone | 5 |
| Percent Decode Average | PercentDecodeAverage | 3 |
| Absolute X Dimension | AbsoluteXDimension | 4 |
| Overall Symbol Grade Avg | OverallSymbolGradeAvg | 3 |
| Direction | Direction | 5 |
| Checksum | Checksum | 4 |
| Self Check | SelfCheck | 8 |
| Symbology and Addendum | SymbologyAndAddendum | 5 |
| Horizontal Position | HorizontalPosition | 5 |
| Vertical Position | VerticalPosition | 5 |
| Good Scans on Code | GoodScansOnCode | 4 |
| Total Scans on Code | TotalScansOnCode | 4 |
| Good Quiet Zones | GoodQuietZones | 4 |
| Lead QZ in X’s | LeadQzInXs | 3 |
| Trail QZ in X’s | TrailQzInXs | 3 |
| Sync State | SyncState | 5 |
| X Units Times 10 | XUnitsTimes10 | 3 |
| Percent Good Global Thresholds | PercentGoodGlobalThresholds | 3 |
| PDF 417 Gap Failure | PDF417GapFailure | 5 |
| Decodeability Failure | DecodeabilityFailure | 5 |

**Table 17 Bar Code Data Fields**

| Name | Database Name | Maximum Database Field Size (Bytes) |
|---|---|---|
| Defects Failure | DefectsFailure | 5 |
| Percent Decode Failure | PercentDecodeFailure | 5 |
| Quiet Zone Failure | QuietZoneFailure | 5 |
| Symbol Contrast Failure | SymbolContrastFailure | 5 |
| Encodation Failure | EncodationFailure | 5 |
| Checksum Failure | ChecksumFailure | 5 |
| Calibration Warning | CalibrationWarning | 5 |
| Overall Grade Failure | OverallGradeFailure | 5 |
| Internal Data Format Error | InternalDataFormatError | 5 |
| Modulation Failure | ModulationFailure | 5 |
| Minimum Reflectance Failure | MinimumReflectanceFailure | 5 |
| Minimum Edge Contrast Failure | MinimumEdgeContrastFailure | 5 |
| Disregard Quiet Zone Failures | DisregardQuietZoneFailures | 5 |
| Disregard Contrast Failures | DisregardContrastFailures | 5 |

## RFID Data Fields

**Table 18 RFID Version 1 Data Fields**

| Name | Database Name | Maximum Database Field Size (Bytes) |
|---|---|---|
| RFID Tag Failure | RfidTagFailure | 5 |
| Pre-Checked | RfidPrechecked | 5 |
| Sequence Number | RfidSequenceNumber | 5 |
| Retry Number | RfidRetryNumber | 3 |
| Error Count | RfidErrorCount | 3 |
| Tag Type | RfidTagType | 32 |
| Failed Tag Count | RfidFailedTagCount | 10 |
| Tag Write Count | RfidTagWriteCnt | 10 |
| Data Length | RfidDataLength | 5 |
| Raw Data | RfidRawData | 56 |

**Table 19 RFID Version 2 Fields**

| Name | Database Name | Maximum Database Field Size (Bytes) |
|---|---|---|
| RFID Tag Failure | RfidTagFailure | 5 |
| Pre-Checked | RfidPrechecked | 5 |
| Sequence Number | RfidSequenceNumber | 5 |
| Retry Number | RfidRetryNumber | 3 |
| Error Count | RfidErrorCount | 3 |
| Tag Type | RfidTagType | 32 |
| Failed Tag Count | RfidFailedTagCount | 10 |
| Tag Write Count | RfidTagWriteCnt | 10 |
| Data Length | RfidDataLength | 5 |
| Raw Data (see NOTE on page 275) | RfidRawData | 4,121 |
| Total Data Length | RfidTotalLength | 5 |
| Operation Type | RfidOpType | 5 |
| Field Type | RfidFieldType | 4 |
| **NOTE:** For the RfidRawData field, it is not necessary to set your database field to the maximum size. It is only necessary to set it to the largest data field size of the tags that are being used. | | |

# A Linux Font Configuration File

```
#    @(#)linux.fontconfig.RedHat.9.0.properties                1.6 03/11/14
# Copyright 2003 Sun Microsystems, Inc. All rights reserved.
# Version
version=1
# Component Font Mappings

allfonts.chinese-gb18030=-misc-zysong18030-medium-r-normal--*-%d-*-*-c-*-
iso10646-1
allfonts.chinese-gb18030.motif=-isas-song ti-medium-r-normal--*-%d-*-*-c-*-
gb2312.1980-0
allfonts.chinese-big5=-arphic technology co.-ar pl mingti2l big5-medium-r-
normal--*-%d-*-*-c-*-iso10646-1
allfonts.chinese-big5.motif=-taipei-fixed-medium-r-normal--*-%d-*-*-c-*-big5-
0
allfonts.lucida=-b&h-lucidasans-medium-r-normal-sans-*-%d-*-*- p-*-iso8859-1

serif.plain.japanese-x0208=-misc-kochi mincho-medium-r-normal--*-%d-*-*-c-*-
jisx0208.1983-0
serif.plain.korean=-misc-baekmuk batang-medium-r-normal--*-%d-*-*-c-*-
iso10646-1
serif.plain.korean.motif=-misc-baekmuk batang-medium-r-normal--*-%d-*-*-c-*-
ksc5601.1987-0
serif.plain.latin-1=-b&h-lucidabright-medium-r-normal--*-%d-*-*-p-*-iso8859-1
serif.plain.latin-1.motif=-b&h-luxi serif-medium-r-normal--*-%d-*-*-p-*-
iso8859-1

serif.bold.japanese-x0208=-misc-kochi mincho-medium-r-normal--*-%d-*-*-c-*-
jisx0208.1983-0
serif.bold.korean=-misc-baekmuk batang-medium-r-normal--*-%d-*-*-c-*-
iso10646-1
serif.bold.korean.motif=-misc-baekmuk batang-medium-r-normal--*-%d-*-*-c-*-
ksc5601.1987-0
serif.bold.latin-1=-b&h-lucidabright-demibold-r-normal--*-%d-*-*-p-*-iso8859-
1
serif.bold.latin-1.motif=-b&h-luxi serif-bold-r-normal--*-%d-*-*-p-*-iso8859-
1
```

```
serif.italic.japanese-x0208=-misc-kochi mincho-medium-r-normal--*-%d-*-*-c-*-
jisx0208.1983-0
serif.italic.korean=-misc-baekmuk batang-medium-r-normal--*-%d-*-*-c-*-
iso10646-1
serif.italic.korean.motif=-misc-baekmuk batang-medium-r-normal--*-%d-*-*-c-*-
ksc5601.1987-0
serif.italic.latin-1=-b&h-lucidabright-medium-i-normal--*-%d-*-*-p-*-iso8859-
1
serif.italic.latin-1.motif=-b&h-luxi serif-medium-i-normal--*-%d-*-*-p-*-
iso8859-1

serif.bolditalic.japanese-x0208=-misc-kochi mincho-medium-r-normal--*-%d-*-*-
c-*-jisx0208.1983-0
serif.bolditalic.korean=-misc-baekmuk batang-medium-r-normal--*-%d-*-*-c-*-
iso10646-1
serif.bolditalic.korean.motif=-misc-baekmuk batang-medium-r-normal--*-%d-*-*-
c-*-ksc5601.1987-0
serif.bolditalic.latin-1=-b&h-lucidabright-demibold-i-normal--*-%d-*-*-p-*-
iso8859-1
serif.bolditalic.latin-1.motif=-b&h-luxi serif-bold-i-normal--*-%d-*-*-p-*-
iso8859-1

sansserif.plain.japanese-x0208=-misc-kochi gothic-medium-r-normal--*-%d-*-*-
c-*-jisx0208.1983-0
sansserif.plain.korean=-misc-baekmuk gulim-medium-r-normal--*-%d-*-*-c-*-
iso10646-1
sansserif.plain.korean.motif=-misc-baekmuk gulim-medium-r-normal--*-%d-*-*-c-
*-ksc5601.1987-0
sansserif.plain.latin-1=-b&h-lucidasans-medium-r-normal-sans-*-%d-*-*-p-*-
iso8859-1
sansserif.plain.latin-1.motif=-b&h-luxi sans-medium-r-normal--*-%d-*-*-p-*-
iso8859-1

sansserif.bold.japanese-x0208=-misc-kochi gothic-medium-r-normal--*-%d-*-*-c-
*-jisx0208.1983-0
sansserif.bold.korean=-misc-baekmuk gulim-medium-r-normal--*-%d-*-*-c-*-
iso10646-1
sansserif.bold.korean.motif=-misc-baekmuk gulim-medium-r-normal--*-%d-*-*-c-
*-ksc5601.1987-0
sansserif.bold.latin-1=-b&h-lucidasans-bold-r-normal-sans-*-%d-*-*-p-*-
iso8859-1
sansserif.bold.latin-1.motif=-b&h-luxi sans-bold-r-normal--*-%d-*-*-p-*-
iso8859-1

sansserif.italic.japanese-x0208=-misc-kochi gothic-medium-r-normal--*-%d-*-*-
c-*-jisx0208.1983-0
sansserif.italic.korean=-misc-baekmuk gulim-medium-r-normal--*-%d-*-*-c-*-
iso10646-1
sansserif.italic.korean.motif=-misc-baekmuk gulim-medium-r-normal--*-%d-*-*-
c-*-ksc5601.1987-0
sansserif.italic.latin-1=-b&h-lucidasans-medium-i-normal-sans-*-%d-*-*-p-*-
iso8859-1
```

```
sansserif.italic.latin-1.motif=-b&h-luxi sans-medium-i-normal--*-%d-*-*-p-*-
iso8859-1


sansserif.bolditalic.japanese-x0208=-misc-kochi gothic-medium-r-normal--*-%d-
*-*-c-*-jisx0208.1983-0
sansserif.bolditalic.korean=-misc-baekmuk gulim-medium-r-normal--*-%d-*-*-c-
*-iso10646-1
sansserif.bolditalic.korean.motif=-misc-baekmuk gulim-medium-r-normal--*-%d-
*-*-c-*-ksc5601.1987-0
sansserif.bolditalic.latin-1=-b&h-lucidasans-bold-i-normal-sans-*-%d-*-*-p-*-
iso8859-1
sansserif.bolditalic.latin-1.motif=-b&h-luxi sans-bold-i-normal--*-%d-*-*-p-
*-iso8859-1


monospaced.plain.japanese-x0208=-misc-kochi mincho-medium-r-normal--*-%d-*-*-
c-*-jisx0208.1983-0
monospaced.plain.korean=-misc-baekmuk batang-medium-r-normal--*-%d-*-*-c-*-
iso10646-1
monospaced.plain.korean.motif=-misc-baekmuk batang-medium-r-normal--*-%d-*-*-
c-*-ksc5601.1987-0
monospaced.plain.latin-1=-b&h-lucidatypewriter-medium-r-normal-sans-*-%d-*-*-
m-*-iso8859-1
monospaced.plain.latin-1.motif=-b&h-luxi mono-medium-r-normal--*-%d-*-*-m-*-
iso8859-1


monospaced.bold.japanese-x0208=-misc-kochi mincho-medium-r-normal--*-%d-*-*-
c-*-jisx0208.1983-0
monospaced.bold.korean=-misc-baekmuk batang-medium-r-normal--*-%d-*-*-c-*-
iso10646-1
monospaced.bold.korean.motif=-misc-baekmuk batang-medium-r-normal--*-%d-*-*-
c-*-ksc5601.1987-0
monospaced.bold.latin-1=-b&h-lucidatypewriter-bold-r-normal-sans-*-%d-*-*-m-
*-iso8859-1
monospaced.bold.latin-1.motif=-b&h-luxi mono-bold-r-normal--*-%d-*-*-m-*-
iso8859-1


monospaced.italic.japanese-x0208=-misc-kochi mincho-medium-r-normal--*-%d-*-
*-c-*-jisx0208.1983-0
monospaced.italic.korean=-misc-baekmuk batang-medium-r-normal--*-%d-*-*-c-*-
iso10646-1
monospaced.italic.korean.motif=-misc-baekmuk batang-medium-r-normal--*-%d-*-
*-c-*-ksc5601.1987-0
monospaced.italic.latin-1=-b&h-lucidatypewriter-medium-i-normal-sans-*-%d-*-
*-m-*-iso8859-1
monospaced.italic.latin-1.motif=-b&h-luxi mono-medium-i-normal--*-%d-*-*-m-*-
iso8859-1


monospaced.bolditalic.japanese-x0208=-misc-kochi mincho-medium-r-normal--*-
%d-*-*-c-*-jisx0208.1983-0
monospaced.bolditalic.korean=-misc-baekmuk batang-medium-r-normal--*-%d-*-*-
c-*-iso10646-1
monospaced.bolditalic.korean.motif=-misc-baekmuk batang-medium-r-normal--*-
%d-*-*-c-*-ksc5601.1987-0
monospaced.bolditalic.latin-1=-b&h-lucidatypewriter-bold-i-normal-sans-*-%d-
*-*-m-*-iso8859-1
```

```
monospaced.bolditalic.latin-1.motif=-b&h-luxi mono-bold-i-normal--*-%d-*-*-m-
*-iso8859-1


dialog.plain.japanese-x0208=-misc-kochi gothic-medium-r-normal--*-%d-*-*-c-*-
jisx0208.1983-0
dialog.plain.korean=-misc-baekmuk gulim-medium-r-normal--*-%d-*-*-c-*-
iso10646-1
dialog.plain.korean.motif=-misc-baekmuk gulim-medium-r-normal--*-%d-*-*-c-*-
ksc5601.1987-0
dialog.plain.latin-1=-b&h-lucidasans-medium-r-normal-sans-*-%d-*-*-p-*-
iso8859-1
dialog.plain.latin-1.motif=-b&h-luxi sans-medium-r-normal--*-%d-*-*-p-*-
iso8859-1


dialog.bold.japanese-x0208=-misc-kochi gothic-medium-r-normal--*-%d-*-*-c-*-
jisx0208.1983-0
dialog.bold.korean=-misc-baekmuk gulim-medium-r-normal--*-%d-*-*-c-*-
iso10646-1
dialog.bold.korean.motif=-misc-baekmuk gulim-medium-r-normal--*-%d-*-*-c-*-
ksc5601.1987-0
dialog.bold.latin-1=-b&h-lucidasans-bold-r-normal-sans-*-%d-*-*-p-*-iso8859-1
dialog.bold.latin-1.motif=-b&h-luxi sans-bold-r-normal--*-%d-*-*-p-*-iso8859-
1


dialog.italic.japanese-x0208=-misc-kochi gothic-medium-r-normal--*-%d-*-*-c-
*-jisx0208.1983-0
dialog.italic.korean=-misc-baekmuk gulim-medium-r-normal--*-%d-*-*-c-*-
iso10646-1
dialog.italic.korean.motif=-misc-baekmuk gulim-medium-r-normal--*-%d-*-*-c-*-
ksc5601.1987-0
dialog.italic.latin-1=-b&h-lucidasans-medium-i-normal-sans-*-%d-*-*-p-*-
iso8859-1
dialog.italic.latin-1.motif=-b&h-luxi sans-medium-i-normal--*-%d-*-*-p-*-
iso8859-1


dialog.bolditalic.japanese-x0208=-misc-kochi gothic-medium-r-normal--*-%d-*-
*-c-*-jisx0208.1983-0
dialog.bolditalic.korean=-misc-baekmuk gulim-medium-r-normal--*-%d-*-*-c-*-
iso10646-1
dialog.bolditalic.korean.motif=-misc-baekmuk gulim-medium-r-normal--*-%d-*-*-
c-*-ksc5601.1987-0
dialog.bolditalic.latin-1=-b&h-lucidasans-bold-i-normal-sans-*-%d-*-*-p-*-
iso8859-1
dialog.bolditalic.latin-1.motif=-b&h-luxi sans-bold-i-normal--*-%d-*-*-p-*-
iso8859-1


dialoginput.plain.japanese-x0208=-misc-kochi mincho-medium-r-normal--*-%d-*-
*-c-*-jisx0208.1983-0
dialoginput.plain.korean=-misc-baekmuk batang-medium-r-normal--*-%d-*-*-c-*-
iso10646-1
dialoginput.plain.korean.motif=-misc-baekmuk batang-medium-r-normal--*-%d-*-
*-c-*-ksc5601.1987-0
dialoginput.plain.latin-1=-b&h-lucidatypewriter-medium-r-normal-sans-*-%d-*-
*-m-*-iso8859-1
```

```
dialoginput.plain.latin-1.motif=-b&h-luxi mono-medium-r-normal--*-%d-*-*-m-*-
iso8859-1


dialoginput.bold.japanese-x0208=-misc-kochi mincho-medium-r-normal--*-%d-*-*-
c-*-jisx0208.1983-0
dialoginput.bold.korean=-misc-baekmuk batang-medium-r-normal--*-%d-*-*-c-*-
iso10646-1
dialoginput.bold.korean.motif=-misc-baekmuk batang-medium-r-normal--*-%d-*-*-
c-*-ksc5601.1987-0
dialoginput.bold.latin-1=-b&h-lucidatypewriter-bold-r-normal-sans-*-%d-*-*-m-
*-iso8859-1
dialoginput.bold.latin-1.motif=-b&h-luxi mono-bold-r-normal--*-%d-*-*-m-*-
iso8859-1


dialoginput.italic.japanese-x0208=-misc-kochi mincho-medium-r-normal--*-%d-*-
*-c-*-jisx0208.1983-0
dialoginput.italic.korean=-misc-baekmuk batang-medium-r-normal--*-%d-*-*-c-*-
iso10646-1
dialoginput.italic.korean.motif=-misc-baekmuk batang-medium-r-normal--*-%d-*-
*-c-*-ksc5601.1987-0
dialoginput.italic.latin-1=-b&h-lucidatypewriter-medium-i-normal-sans-*-%d-*-
*-m-*-iso8859-1
dialoginput.italic.latin-1.motif=-b&h-luxi mono-medium-i-normal--*-%d-*-*-m-
*-iso8859-1


dialoginput.bolditalic.japanese-x0208=-misc-kochi mincho-medium-r-normal--*-
%d-*-*-c-*-jisx0208.1983-0
dialoginput.bolditalic.korean=-misc-baekmuk batang-medium-r-normal--*-%d-*-*-
c-*-iso10646-1
dialoginput.bolditalic.korean.motif=-misc-baekmuk batang-medium-r-normal--*-
%d-*-*-c-*-ksc5601.1987-0
dialoginput.bolditalic.latin-1=-b&h-lucidatypewriter-bold-i-normal-sans-*-%d-
*-*-m-*-iso8859-1
dialoginput.bolditalic.latin-1.motif=-b&h-luxi mono-bold-i-normal--*-%d-*-*-
m-*-iso8859-1

# Search Sequences


sequence.allfonts=latin-1 sequence.allfonts.Big5=latin-1,chinese-big5
sequence.allfonts.GB2312=latin-1,chinese-gb18030

sequence.allfonts.x-euc-jp-linux=latin-1,japanese-x0208
sequence.allfonts.EUC-KR=latin-1,korean sequence.allfonts.GB18030=latin-
1,chinese-gb18030
sequence.fallback=lucida,chinese-big5,chinese-gb18030,japanese-x0208,korean

# Exclusion Ranges

exclusion.japanese-x0208=0390-03d6,2200-22ef,2701-27be


# Font File Names


filename.-arphic_technology_co.-ar_pl_mingti2l_big5-medium-r-normal--*-%d-*-
*-c-*-iso10646-1=/usr/share/fonts/zh_TW/ TrueType/bsmi00lp.ttf
```

```
filename.-misc-baekmuk_batang-medium-r-normal--*-%d-*-*-c-*-iso10646-
=/usr/share/fonts/ko/TrueType/batang.ttf
filename.-misc-baekmuk_gulim-medium-r-normal--*-%d-*-*-c-*-iso10646-
1=/usr/share/fonts/ko/TrueType/gulim.ttf
filename.-misc-kochi_gothic-medium-r-normal--*-%d-*-*-c-*- jisx0208.1983-
0=/usr/share/fonts/ja/TrueType/kochi-gothic.ttf
filename.-misc-kochi_mincho-medium-r-normal--*-%d-*-*-c-*- jisx0208.1983-
0=/usr/share/fonts/ja/TrueType/kochi-mincho.ttf
filename.-misc-zysong18030-medium-r-normal--*-%d-*-*-c-*- iso10646-
1=/usr/share/fonts/zh_CN/TrueType/zysong.ttf


# AWT X11 font paths
awtfontpath.latin-1=/usr/X11R6/lib/X11/fonts/Type1 awtfontpath.chinese-
big5=/usr/share/fonts/zh_TW/TrueType awtfontpath.chinese-
gb18030=/usr/share/fonts/zh_CN/TrueType awtfontpath.japanese-
x0208=/usr/share/fonts/ja/TrueType
awtfontpath.korean=/usr/share/fonts/ko/TrueType
```

# B Contact Information

## Printronix Customer Support Center

**IMPORTANT** **Please have the following information available prior to calling the Printronix Customer Support Center:**

- Model number
- Serial number (located on the back of the printer)
- Installed options (i.e., interface and host type if applicable to the problem)
- Configuration printout: (See “Printing A Configuration”) in your printers Administrator’s manual.
- Is the problem with a new install or an existing printer?
- Description of the problem (be specific)
- Good and bad samples that clearly show the problem (faxing or emailing of these samples may be required)

| | |
|---|---|
| Americas | (714) 368-2686 |
| Europe, Middle East, and Africa | (31) 24 6489 311 |
| Asia Pacific | (65) 6548 4114 |
| China | (86) 800-999-6836 |

http://www.printronix.com/support.aspx

### Printronix Supplies Department

Contact the Printronix Supplies Department for genuine Printronix supplies.

| | |
|---|---|
| Americas | (800) 733-1900 |
| Europe, Middle East, and Africa | (33) 1 46 25 19 07 |
| Asia Pacific | (65) 6548 4116<br>or (65) 6548 4132 |
| China | (86) 400-886-5598 |
| India | (800) 102-7869 |

http://www.printronix.com/supplies-parts.aspx

## Corporate Offices

Printronix, Inc.
15345 Barranca Parkway
Irvine, CA 92618
U.S.A.
Phone: (714) 368-2300
Fax: (714) 368-2600

Printronix Inc.
c/o Printronix Nederland BV
Bijsterhuizen 11-38

6546 AS Nijmegen
The Netherlands
Phone: (31) 24 6489489
Fax: (31) 24 6489499

Printronix Schweiz GmbH 42
Changi South Street 1
Changi South Industrial Estate
Singapore 486763
Phone: (65) 6542 0110
Fax: (65) 6546 1588

Printronix Commercial (Shanghai) Co. Ltd 22F,
Eton Building East

No.555, Pudong Av.
Shanghai City, 200120, P R China
Phone: (86) 400 886 5598

Fax: (86-21) 5138 0564

Visit the Printronix web site at www.printronix.com